[illegible] 3360

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INDEX

Tables & Curves

I. INTRODUCTION

Mr. Edwards discussed the role of the Plant Manager in Company affairs. The Company has made considerable progress in the past years. We have a high standing in industry, we have developed new processes and new products and as demands have changed the Company has kept abreast of them. The Plant Managers have had a considerable share in accomplishing this, the success of the Company depends on each individual Plant Manager. The manager selects personnel and it is his responsibility to have properly functioning men. The men are trained by the manager and he influences their morale. The manager has control of scheduling, and control of equipment, he has charge of labor relations, he controls the product quality, the service, and he contributes to sales.

The experience of the Company is a collection of the individual experiences of all the plants. The plants need forceful direction, and strong contacts between the plants and main office. It is the manager's duty to bring out his views on any differences. He needs to bring out all the facts, many of which may be new to management, to arrive at a common understanding of the problems. The Company policies are derived from these collections of the facts. This participation in decisions builds up mutual confidence in the Company and the manager's strength in the Company.

The Company has often failed to recognize how we depend upon the character, strength and contributions to policies by the Plant Manager.

Mr. T. E. Reilly pointed out that the Company wants to sell the best-quality product and to give good service at a profit.

II. TANKCAR UTILIZATION

Mr. Nearpass discussed the recent changes in the traffic department, with the movement of records from Chicago to Indianapolis and that all future handling will originate from the Indianapolis office. We hope to gain more control and make the entire operation more efficient by putting the records on IBM. This is currently being investigated.

Our current handling costs run approximately $80,000 per year. There is opportunity for considerable savings and improvement in efficiency, with accompanying improvement in service to our customers. The plants too often use 8,000 gallon cars when 10,000 gallon cars would be more efficient, decreasing the material handling costs and increasing the quantity of materials handled. Cars need to be more carefully inspected before loading. Bad order cars cost time lost in loading and delays in delivery to customers. Thirty percent of the bad orders are due to journal bearing troubles.

For effective control, the traffic department needs more complete and early track reports. These should include car use, empty or storage, source, and last contents. Cars leaving under load should be traced by the plant itself. The plants can set up with their railroads for this tracing. And the traffic department plans to institute tracings on receipt of the track reports.

Cars need to be kept as clean as possible, keeping sludge from building up. This can increase car lading, and save freight on up to 2-3 tons per trip. The car exteriors, also need regular cleaning. Scraping seems to be the only effective method. Indianapolis has a program of cleaning all cars before reloading. This takes 3-4 hours, using 2-3,000 gallons of fresh creosote oil, heating and agitating with air. The used oil is redistilled, with the residue going to road tar. By a regular program they are able to keep all the cars in good shape, and can use cars for any purpose. Mr. Lenox noted that cars incoming from the shops often have wrong light weights, which they regularly restencil. All plants should weigh and correct the tare weights on all cars coming from the shops.

To keep mileage in balance, plants should be more cautious in routing, returning cars over the same carrier. This may get out of balance occasionally, however, and the traffic department may ask plants to adjust routings. Our car efficiencies in 1959 ran from 19.7 to 95.7% with the average at 60.1%. The accompanying chart, Table II A on page 4, shows the plant tankcar return comparisons.

The traffic department needs everyone's cooperation in keeping them advised of car needs. They hope to upgrade the fleet through repair, repainting, and replacement. Many of the plain cars and idle 8,000 gallon cars will be released.

Mr. Nelson pointed out their problem, that it requires 7-8 days to get cars from the East if they cut their fleet too low. They also have customers holding cars up to 2 month on free lease. This is definitely objectionable as it can decrease oil profit by up to 1½¢ per gallon, to pay our lease costs.

The Cleveland Plant bills GATX for all repairs irrespective of size. Mr. Noarpass suggested proceeding with repairs and advising our traffic department who will bill GATX. He advised that we do bill railroads on a per diem basis for delays caused by their negligence. Some of the penalty defects on cars are broken steps, loose or broken running boards, or anything that can harm a nearby worker.

We may be forced into the use of 16,000 gallon cars. The benefit is to the customer. United States Steel Corporation is now using them on electrode binder pitch.

TABLE II A

TANK CAR RETURN - % OF COST

1959		1958		1957	
# 1	95.7%	# 4	101.5%	#10	126.5%
10	89.3	10	83.9	1	84.8
6	86.5	1	80.9	4	72.9
4	73.5	8	64.8	2	68.2
8	65.0	2	59.3	3	47.9
3	63.5	3	50.2	6	46.5
2	60.6	6	40.9	8	42.6
11	45.1	12	34.4	5	23.9
5	44.4	7	28.7	7	19.4
7	34.2	5	27.8	11	7.9
12	19.7	11	21.7	12	-
Avg	68.1	Avg.	58.5	Avg.	63.3

III. SPECIFICATIONS AND PROCEDURES

Mr. Spychalski reviewed the methods followed at Maywood in setting up their specification and procedure files. They gathered data and files on product and raw material specifications and set up a code system. From the available information they wrote specifications where possible, on others they contacted customers or suppliers to obtain complete current information. They have submitted the written specifications to Reilly Laboratories, usually Mr. Mitchell or Mr. Graff and to the main office, usually Dr. Mootz, for approval. Then completed copies were furnished to the plant supervisory personnel, to the main office and to the Reilly Laboratories, in addition copies of product specifications were furnished to the divisional sales managers and copies of the raw material specifications were furnished to the purchasing department.

Manufacturing specifications were then written up, generally the same as product specifications except with narrower limits and these were furnished to all production people.

Later it was found advisable to follow the same system for analytical procedures. They used ASTM Procedures where possible, and wrote up their own laboratory procedures. With these defined, many questions on tests were eliminated.

It is necessary to keep revising these specifications and procedures and it takes time, but they have found it well worth the effort. Chattanooga has followed in Maywood's steps and set up a complete file on their specifications. Their methods in setting it up were similar to Maywood's.

Many points were brought out in discussion on the advantages, particularly when moving or changing orders between plants. A complete set of data can be sent, simplifying and clarifying all points in the manufacture of the product. Manufacturing procedures are of infinite value within the plant, when men change or when new products are started or stopped. Raw material specifications are invaluable when changing suppliers, all pertinate details can be pinned down and the plant process or procedure is not effected.

The individuality between plants of manufacturing procedures was discussed. They cannot be freely interchanged, but can be used only to help a plant in setting up their own manufacturing procedure. Product specifications can probably, most efficiently be distributed from a central point, and with information and advice on new or changed or unpublished specifications, we at the main office will undertake to code, copy and distribute these. We are now attempting to check all electrode pitch specifications and methods of analysis and will distribute these within the next few months.

IV. SAFETY

Mr. R. J. Boyle and Mr. P. A. Kline, resident engineer for Employer's Mutual, discussed our safety program which for the past 12 years has been under the supervision of Employer's Mutual. They service all of our plants, except that in Ohio, West Virginia and Washington the plants are also subject to state agency supervision. Our accident insurance rates are based on our loss and accident record. It is a retro-spective plan and we make our own rates. Our safety record has been good, but is presently getting poorer.

Safety is a very important part of our plant and business operation, accidents cost money. They cost the same as production, raw materials and labor. The hidden losses from accidents are important and can be as much as four times the actual compensation for the loss. The hidden costs include time lost to the individual, to the person doing the first aid treatment, and to fellow workers from tension which may cause waste and mistakes. The actual accident may cost material, equipment breakage and product waste. All accidents do not necessarily involve a loss-time injury.

The Plant Manager must lead in interest to guide supervisors, foremen, and workers. Much thought has been given to operations and to improvement of products and processes and safety must be an integral part. It must be taken into account with other planning. Company management, Plant Managers and Supervisors must all share in individual responsibility of supervision of safety. We must look for and see potential safety hazards and we must take action with them as with other plant problems.

Accident causes are due 90% to the human element. Employee training and education are necessary for a successful accident prevention program.

Some things to look for, for public safety, are attractive nuisances to outsiders as well as offensive or blinding odors and fumes. Railroad clearances must be maintained whether permanent or temporary. In general, these standard clearances are eight feet to the sides from the center of the railroad track, seventeen feet overheat at building entrances, twenty-two feet overhead near buildings and twenty-five feet overhead in the open for wiring or piping. Where substandard, signs and warnings should be posted. For a good safety program, the foreman's accident investigation forms should be used. These can be used by the management to determine the cause and prevent reoccurrances, but should not be used solely to place the blame for an accident. They are a tool for remedy.

Mr. Kline showed a short movie, "Safety Doesn't Happen." This showed a true to life plant operation and the successful introduction of a safety program. And it stressed that for such a program to be operated and be successful, the manager and supervisors must generate the interest and be vitally and wholly behind the program.

Mr. Boyle listed some points to be currently stressed. First, operating procedures, as discussed earlier, should include precautions against particular hazards such as possible personal injury, fire and explosion hazards. Second, we must check all of our plants on railroad clearances, and post signs or make corrections where necessary. Third, we have had a number of accidents among technical people, serious burns and cuts, which should be stressed within the plant safety program.

V. TUBE STILL OPERATIONS

Mr. Nagy reviewed some of the recent historical facts concerning the development of improvements to the stills. In 1952, the lightweight setting was developed to combat some of the high material costs, low thermal efficiencies, and batch controllability problems. The insulating brick decreased the quantity of brick required, and the heat required to heat up a setting. Tests showed that the overall thermal efficiency of the old brick settings was 25-30% and of the then new insulating brick settings, 45-50%.

In an effort to further increase the efficiency and decrease the inflation hiked replacement costs, and with our coke retort experience, some reports of the petroleum industry, and other considerations, the still with fired tubes was developed. It was estimated to have a possible thermal efficiency of 60%. The original cost estimates which have proven to be within reason, indicated the installation of a new 5,000 gallon tube still would be on the order of $12,250 vs. $18,000 for the conversion of an old setting to the lightweight setting. The still replacement cost on lightweight settings was approximately $9,000 while the tube replacement, which should be all that is required on the tube still, was estimated at $1,800 for 12 inch tubes and $3,100 for 18 inch tubes. The shell stills had in some cases a life as low as 2-300 runs, or longer if bottoms are replaced, while the developmental tube still has shown absolutely no deterioration after 250 runs. The general design seems to have been well justified.

The first design and installation was a 5,000 gallon still at Maywood, on which most of the experimentation has been done and test data collected.

The experimental still was designed to equal in charging capacity the Maywood 7½ x 16 stills in the light settings. At the time these were our fastest stills in turnover time. It also had to be sized so that both tubes would remain covered with residue after distilling off half of the charge. It was also designed to be operated at a pressure of 50 psi. The final design size was a still 8' diameter x 18' long with 18" horizontal return tubes. Although the still was designed for 18" tubes, 12" tubes were actually installed so that it could be purposely over fired to obtain heat transfer information. A flame length of about 6' was anticipated so the first 6' of tube was protected on the inside with castable refractory. In order to obtain the heat transferdata, six thermocouples were peened into the tube wall at varying distances from the burner. Two mechanical agitators were designed and installed. The original agitators had two turbines, one 26" in diameter and one 22". The 26" turbine is about level with the top of the tubes and the 22" is near the bottom of the first pass tube. A steam nozzle was put in at the center of the still to aid in distilling at the end of the runs.

The completed still was insullated with four inches of thermobestos (Calcium silicate) insullation. Two sealed in, nozzle mixing gas burners, made by North American Manufacturing Company were used for heating and an M-H Protectorelay system for flame safety was installed so that we could familiarize ourselves with them for future installations.

There were few problems in the original startup, except for adjustment of the flame safety devices. This was overcome, but it is felt that the safety devices are not justified or necessary. The still was tested on various tars, up to the 25% insoluble Great Lakes Carbon tar and at various firing rates. A firing rate program was determined based on efficiency, and rates of coke formation on the tubes. It was found that there was some coke formation on the tubes at higher temperatures, but this was dissipated by thermal shock on cooling and was washed off by agitation on subsequent runs. The test still had mechanical agitation which operated successfully, but further experimental work is now being done on agitation requirements. There has been a development of trouble from erosion or corrosion on the agitators. The overall thermal efficiency under the programmed firing rates was found to be about 65-68% to remove 50% distillate and it required about 10-12,000 btu per gallon of distillate, for this operation.

The still was tried under pressure, Cleveland tar was run under 20# pressure, and the distillation was normal until a liquid temperature of 420°C was reached, where the pressure became uncontrollable, apparently from breakdown and gas generation of the tar. The distillate quantities nor qualities did not seem to be affected, however, the pitch insolubles for a given pitch were increased over those obtained from the same tar in a shell still operation under atmospheric pressure.

The tube size was increased from 12 to 18 inches and tests were continued, and the efficiency was found to have been lowered. The fuel was changed from oil to gas with little change in efficiency. Some tests were made with the tubes uncovered, and there was no immediate apparent damage. Fuel tests were also made on the new sealed burners with creosote oil and Pap and the operation was similar to fuel oil. The 18 inch tube is theoretically required to obtain sufficient furnace volume to burn oil. The smaller 12 inch tubes are limited to gas burning.

The need for still level indication was pointed out, particularly to be certain of maintaining a level of liquid over the tubes. Chattanooga is using the old Reilly float indicators on a tube conversion still. Cleveland has had remote, float instruments installed on their tube still but as yet do not have sufficient experience.

Granite City has had alot of trouble with the tube temperature thermocouples. The troubles have been in the peened connection, the wiring itself and in the seal through the still shell. We hope to eliminate the tube temperatures when enough data has been collected.

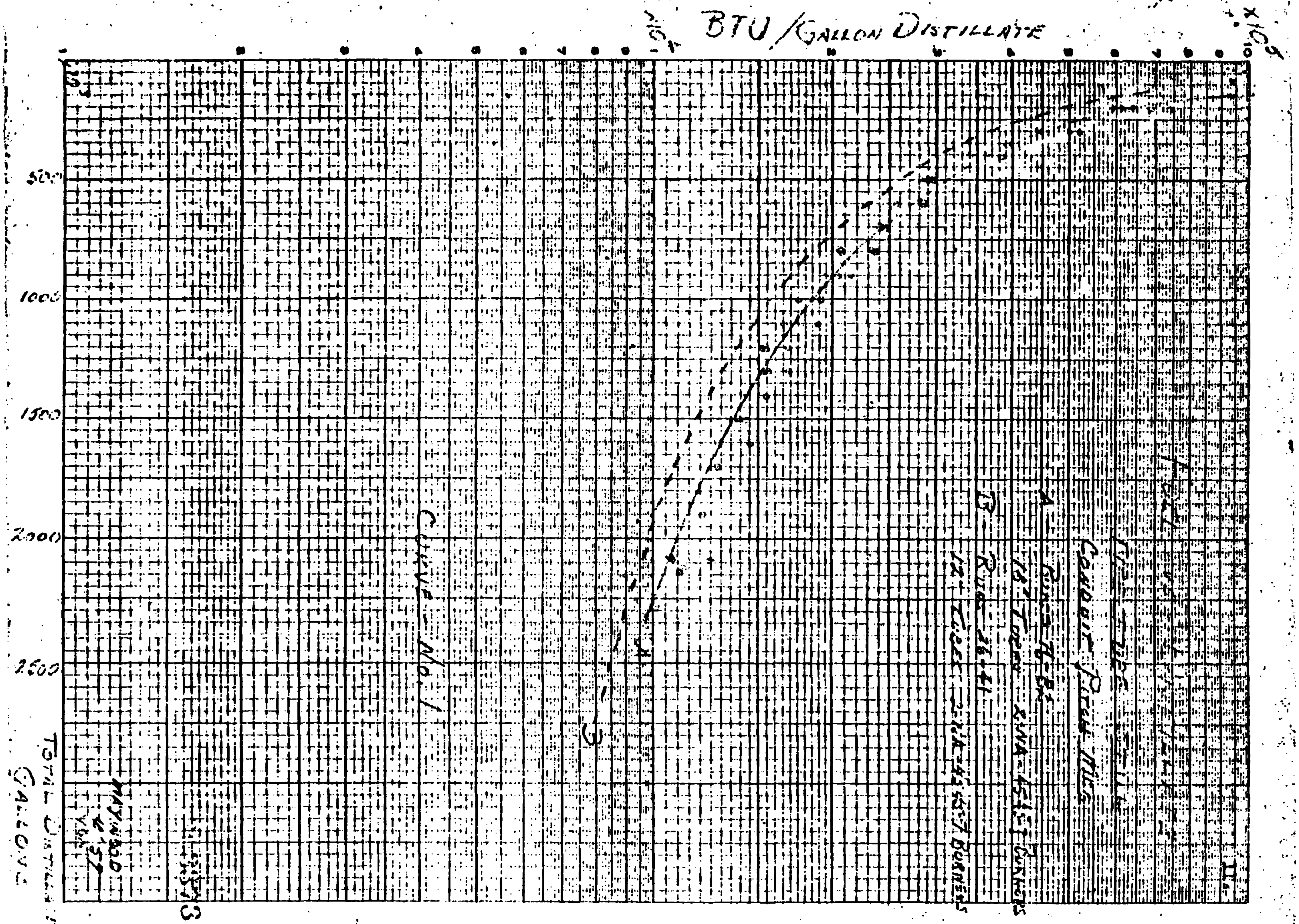
The cleaning cycle is based on observation of subsequent tube temperature increases and is now approximately every 25 runs. Their shell stills are cleaned every 6th run under similar operating conditions. The Haywood tube still keeps itself clean. Cleveland with little long-range experience found that one still after 12 runs on heat treating pitch had coke formation, and another after 12 runs mostly on core pitch, did not need cleaning.

The point of safety and fire danger was brought up, but it was pointed out that the still is much less dangerous than the shell still. In event of tube leakage, any fire would be contained in the tubes or else the tar from a tube rupture would put out the fires. The tubes will contain an explosion from a gas-air mixture when starting up.

One of the major advantages of the tube stills lie in the controllability. There is no heat sink as in the shell still and the distillation can be stopped relatively abruptly. The new forced air burners, make permanent setting of combustion efficiency possible and permit operation by only one valve on the burner throughout the burner operating range.

Chattanooga found the cooling rate on the tube still and equivalently the heat loss to be very similar to the shell still and a lightweight setting. Renton is using converted tube stills on an oil with a column, and found the controllability has increased efficiency and turnover by providing very close control of overhead, with three to five times less variation.

Mr. Nagy presented some curves and charts which are shown beginning on page 11. Curve one shows the comparison of efficiency between 12 and 18 inch tubes on conduit pitch manufacturing. Curve two add the efficiency resulting in a change of burner to the dual fuel type. Curve three shows the efficiency between 12 and 18 inch tubes on the distillation of Cleveland tar. Curve four shows the efficiency on a Granite City tar tube still on electrode pitch. Curve five shows the efficiency of the Granite City tar tube still on core and target pitch. Curve six shows the compairson of the theoretical burner capacities for the single fuel and dual fuel burners. Curve seven shows the engineering department recommendations for firing rate programs for the fire tube stills that have been installed at the various plants.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1500
2000
2500
Total Distillate Gallons
Curve No. 1
A
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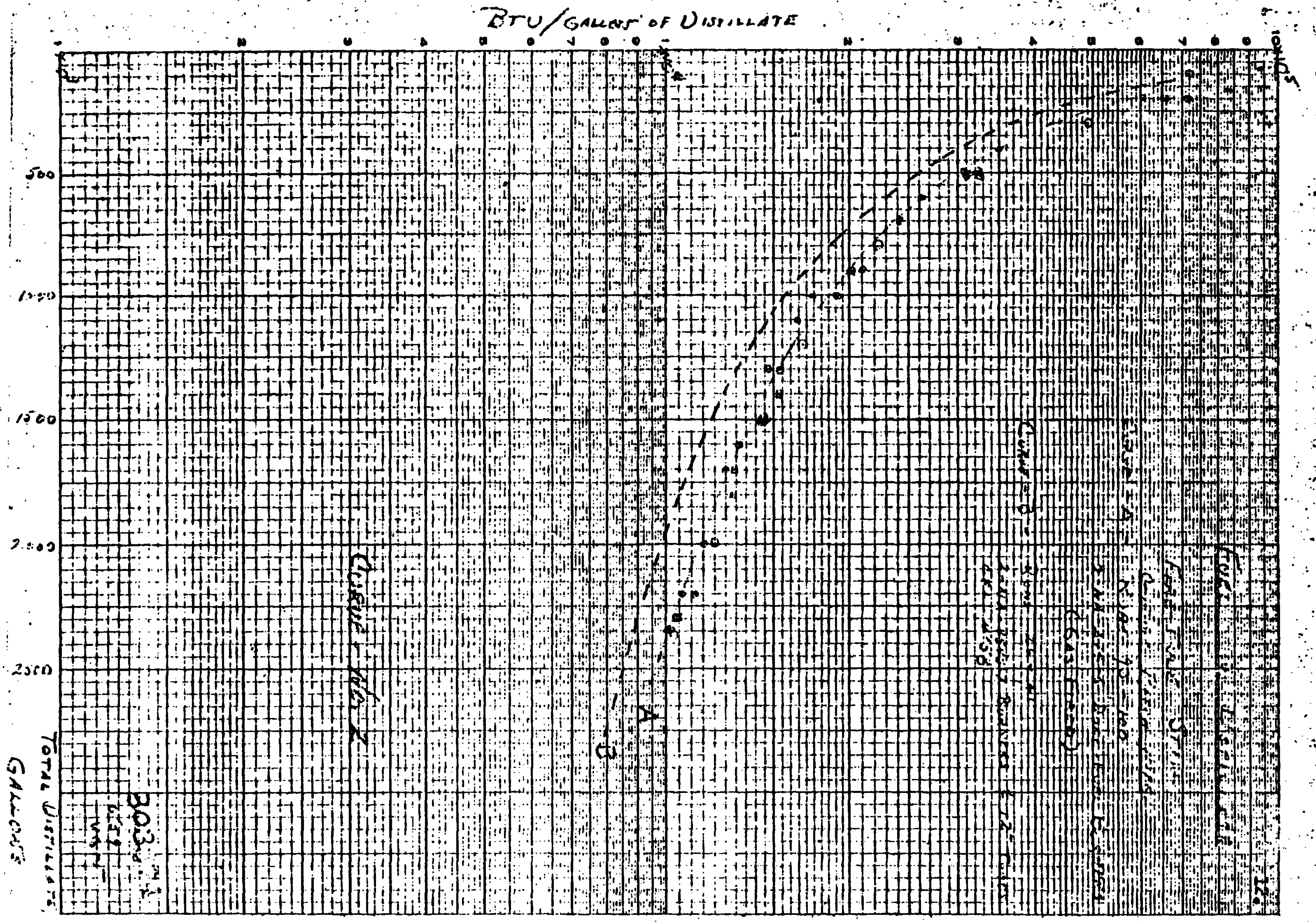
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A
B
Curve No. 2
Curve A
Curve B
(Gas Fired)
Fuel vs Distillate
Fort Valley Still

NO. 340R ... DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
2 CYCLES X ... DIVISIONS PER INCH

EUGENE DIETZGEN CO.
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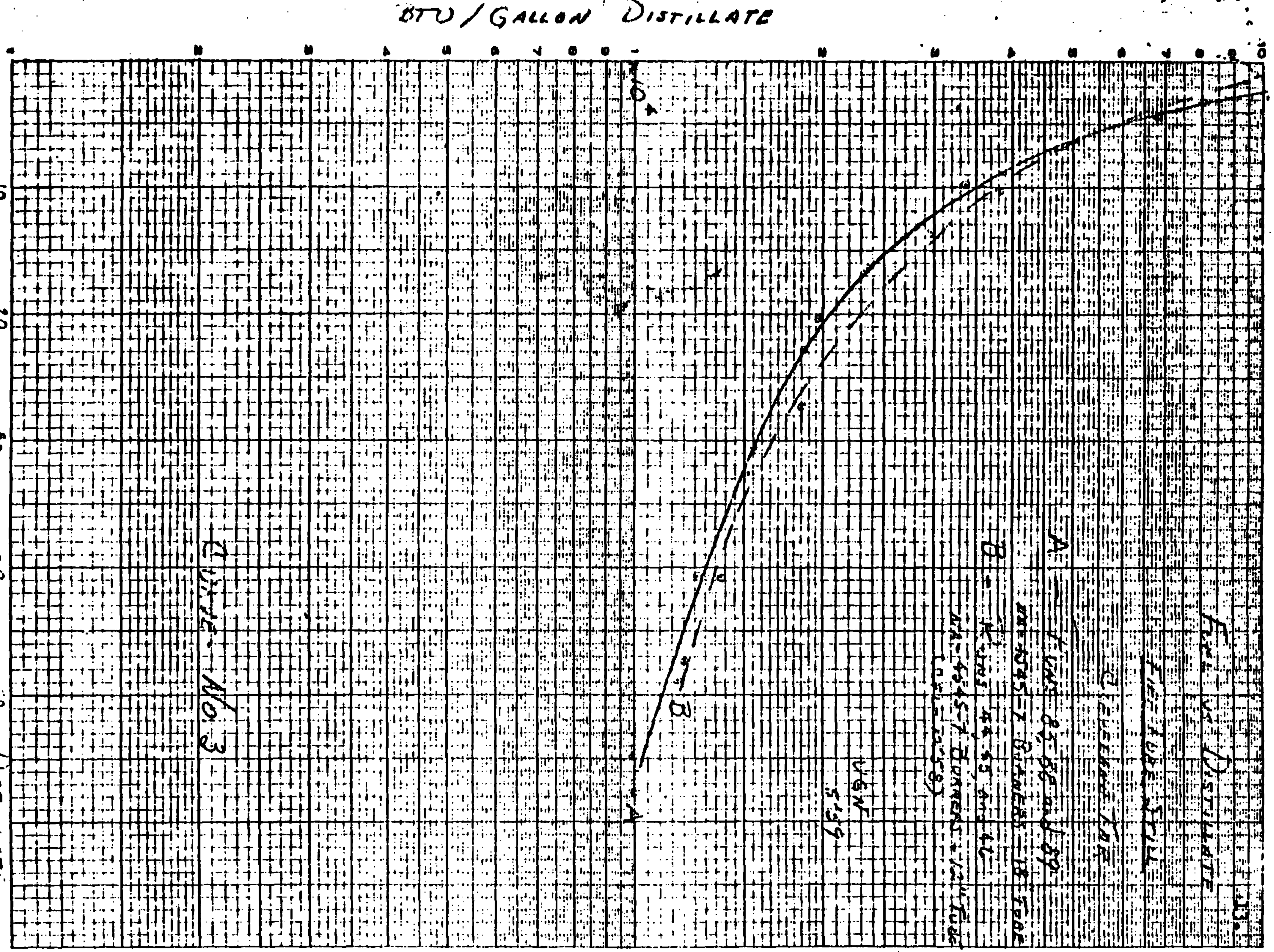

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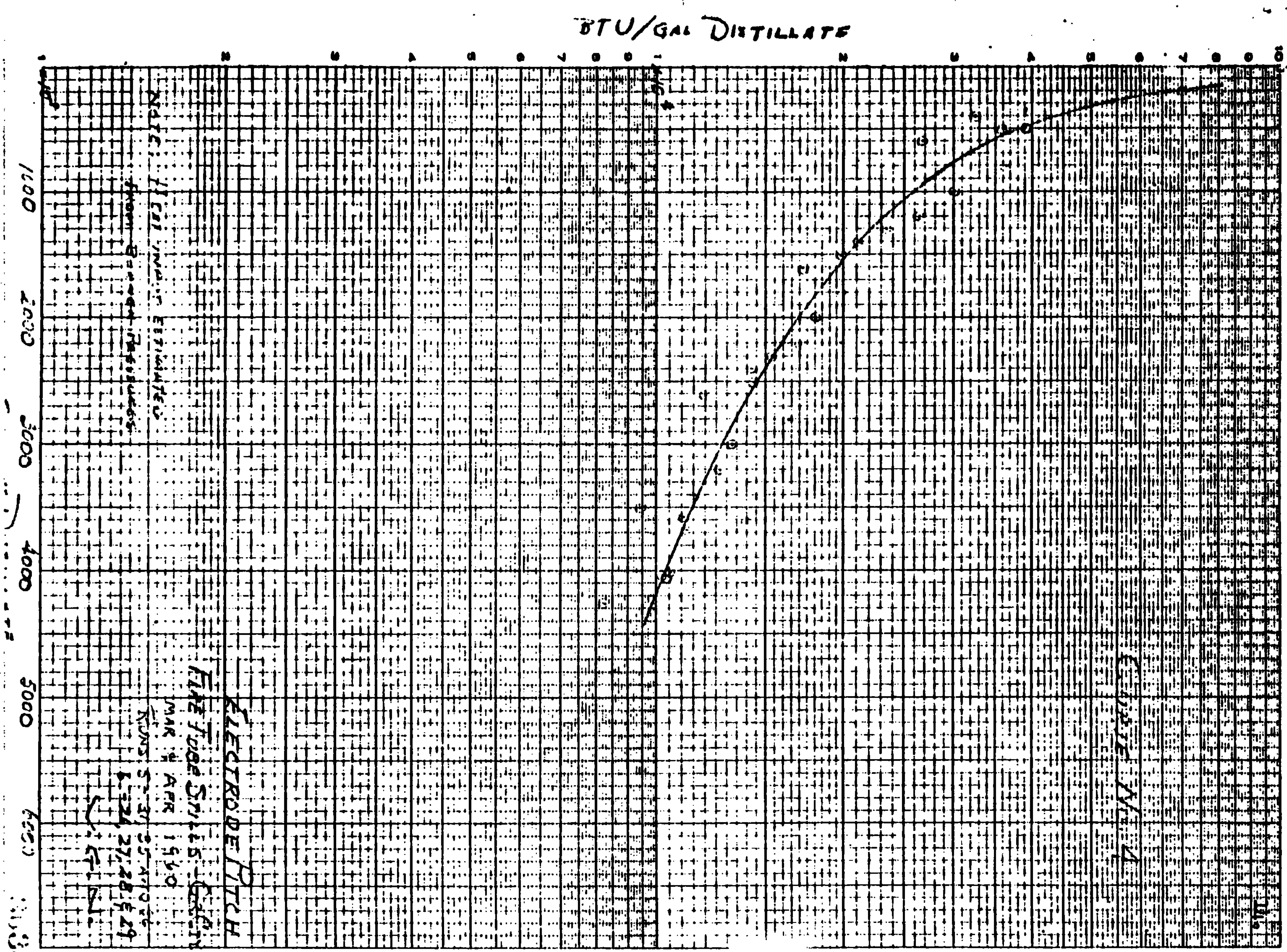
NO. 340-L210 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
2 CYCLES X 10 DIVISIONS PER INCH

EUGENE DIETZGEN CO.
MADE IN U.S.A.



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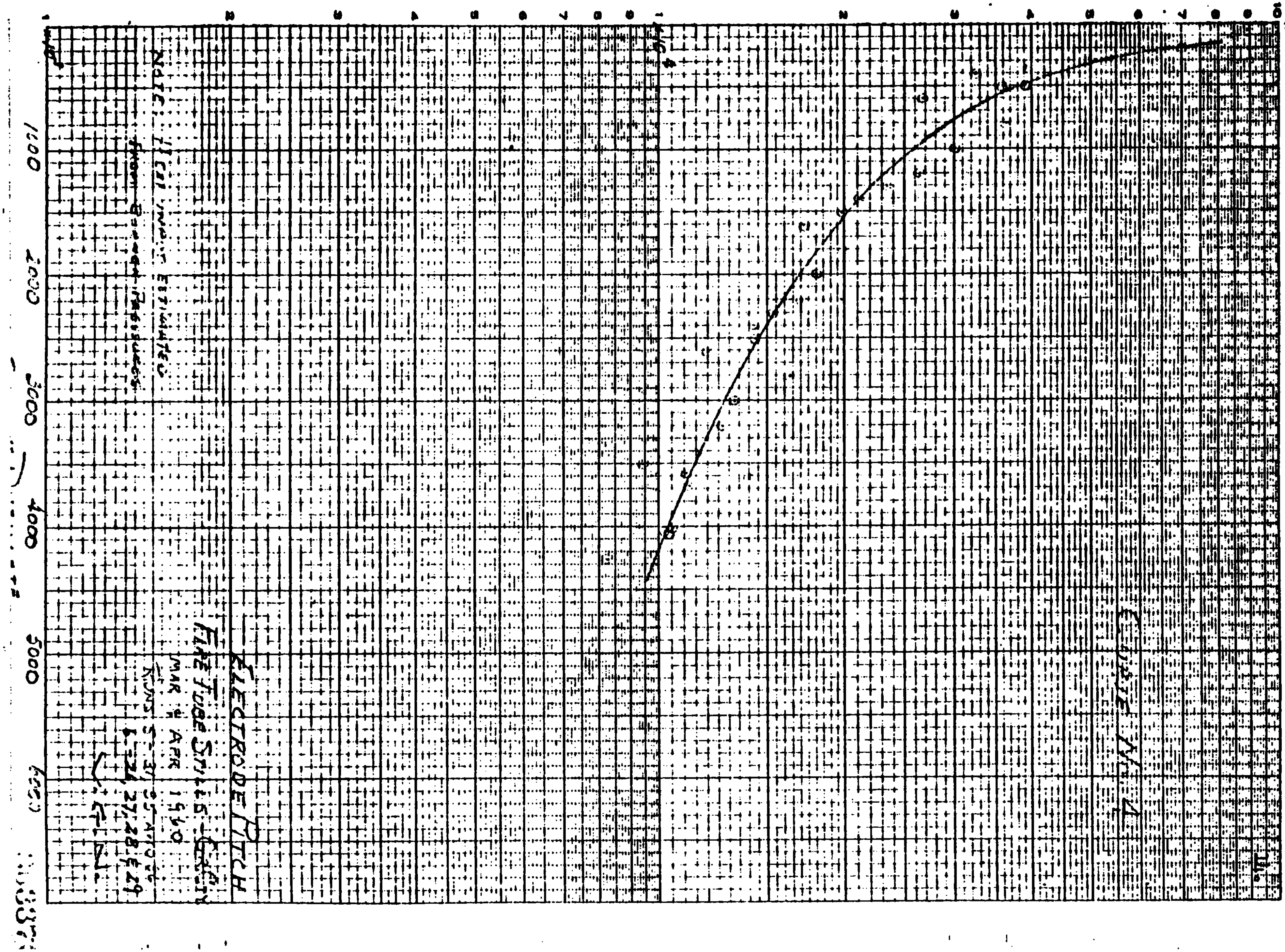
BTU/GAL DISTILLATE



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SEMI-LOGARITHMIC
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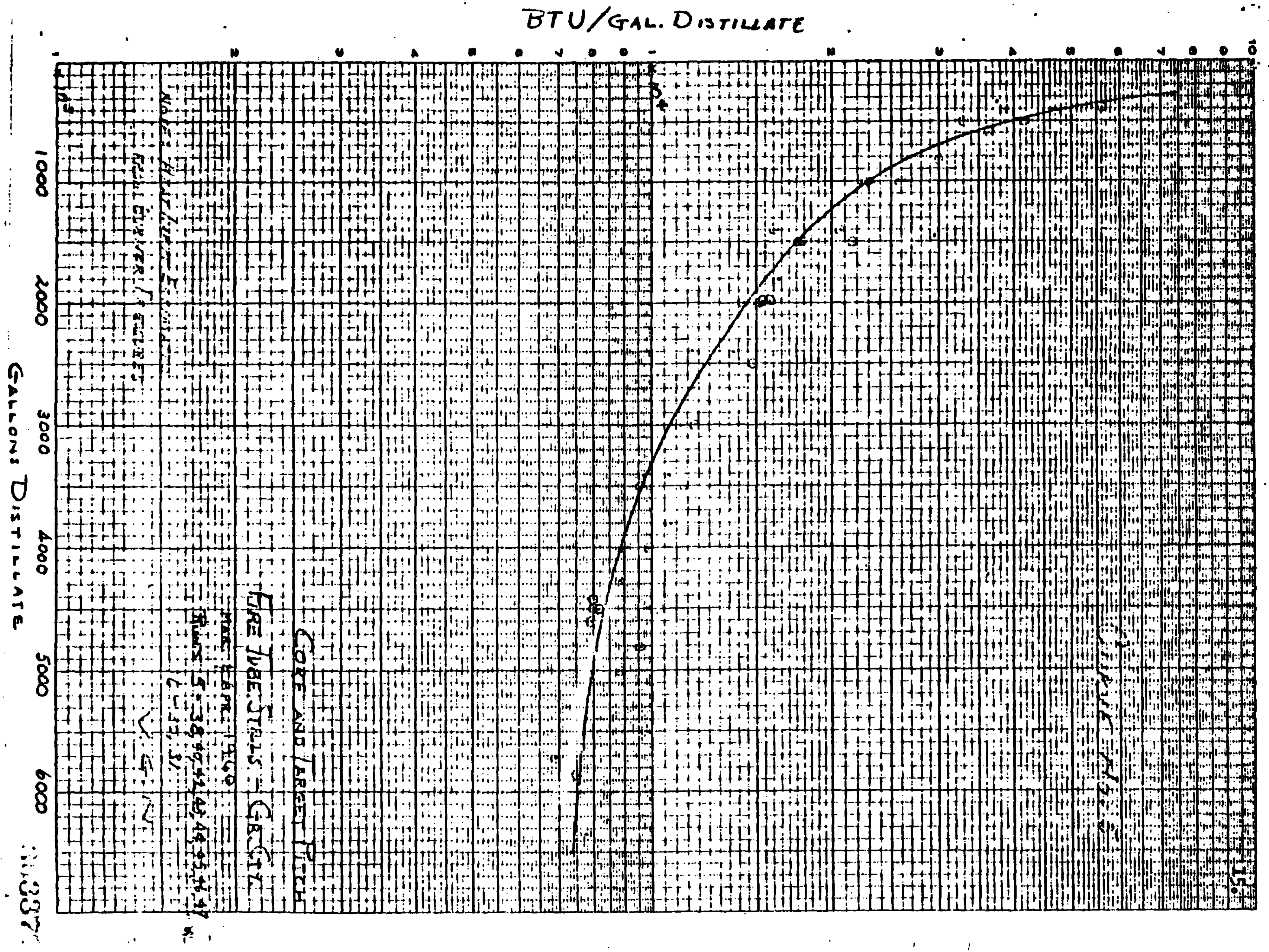

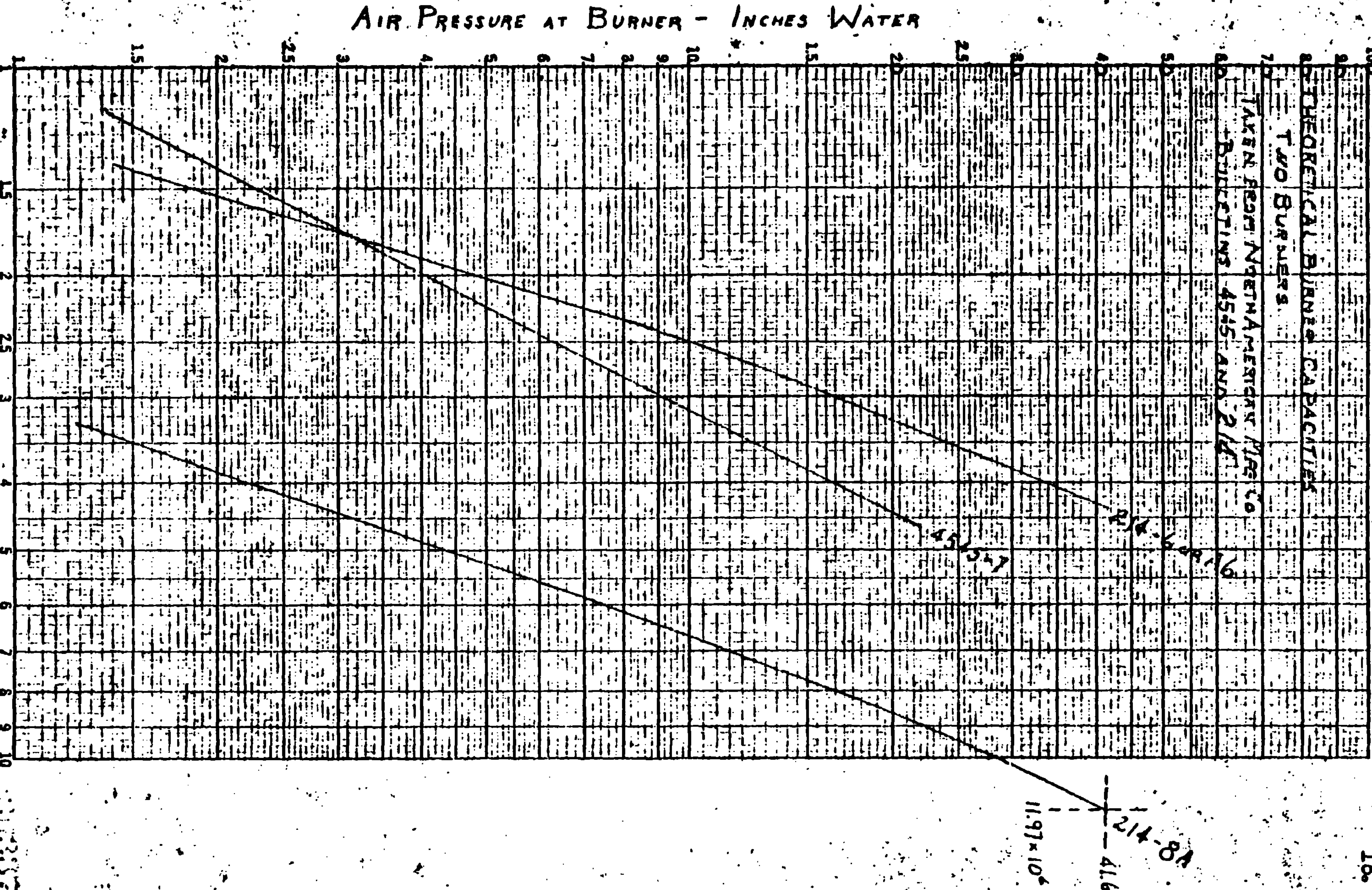
AIR PRESSURE AT BURNER - INCHES WATER
THEORETICAL BURNER CAPACITIES
TWO BURNERS
TAKEN FROM NORTH AMERICAN MFG CO
BULLETINS 4545 AND 214
4545-7
214-6 OR 16
214-8A
11.97×10⁶
41.6

BY ______ DATE 9-30-60 SUBJECT CURRENT SHEET NO. ____ OF ____

CHKD. BY ______ DATE ______ SUGGESTED FIRING RATES JOB NO. ______

FOR FIRE TUBE STILLS 17.

STILL LIQUID TEMP.	MAYWOOD 6-25-59	CHATTANOOGA 9-30-60	FAIRMONT & CLEVELAND (6) 5-9-60	GRANITE CITY & CLEVELAND (10) 9-2-60	RENTON 6-14-60
0-250°C	38" w.c. 16,600 BTU/□'/HR	40" w.c. 14,400 BTU/□'/HR	20" w.c. 16,600 BTU/□'/HR	15" w.c. 15,000 BTU/□'/HR	24" w.c. 16,600 BTU/□'/HR
250-275°	33" 14,900	40" 14,400	16" 14,900	9" 11,650	18" 14,900
275-320°	25½" 13,800	30" 12,300	11" 12,300	9" 11,650	12½" 12,300
320-350°	19½" 12,300	20" 10,500	8" 10,500	5" 8,725	9" 10,500
350-380°	12" 10,200	14" 9,080	6" 9,080	5" 8,725	6½" 9,080
380-400°	7" 8,600	8" 7,375	4" 7,375	2" 5,500	4½" 7,375
ABOVE 400°C	4" 7280	2" 5,000	2" 5,220	2" 5,500	2" 5,220

TURN-OVER TIME

	CONDUIT			TARGET OR CONE	
CHARGE	45 MIN - 1 HR			1½ HR	
DISTILL	6½ - 7½ HR. (5½-6½ FIRING)			9 HR	
ANALYZE	1½ - 3 HR.			1½-2 HR	
BLOW	20 - 30 MIN			30 - 45 MIN	
TOTAL	10-12 HRS.			13 HRS.	

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VI. PITCH HANDLING

Summaries of the pitch manufacturing methods of each plant were prepared by the plant managers and are included on pages 20 through 36. Mr. Lenox discussed the three major pitch handling methods; liquid, bulk static bays, and bulk pans.

Liquid pitch operations are advantageous in that they require lower capital investment. Only a tank, pump, and a small amount of piping are required. The pitch is easily handled with jacketed piping, and a car is generally loaded in less than an hour. Tankcars are required, but the rental should be returned in mileage allowances on long hauls. There is no pitch dust, however, there are some fumes which are easily handled. There is no inventory required, the pitch is made and shipped. This can be a disadvantage as there is no lead time or stock to meet orders. The tankcars can be a problem, as they require maintenance to keep them clean and in good repair. Before each shipment the cars must be inspected internally, the valve seat must be cleaned, coils inspected and outside fittings checked. This requires generally about 1 to 1½ hours, but the total time on preparing and loading a tankcar is still less than time for preparing a car for bulk pitch. Liquid pitch does require an individual complete analysis of each car which increases laboratory costs. However, the total loading costs are still at least 50% of those for bulk pitch.

The bulk pitch pans provide a fast cooling, high pitch turnover operation. There is little pitch inventory which can also be a disadvantage, as in liquid pitch. The pans are more compact and require less space than bays, with a resulting lower loading cost due to less travelling. The pans require less capital investment than bays if both are housed, more without housing. The same high analytical costs apply, as to liquid pitch.

The static pitch bays create problems in that the cost of drilling and blasting are quite high. There is more objectionable dust than with pans. There are some variations in costs due to accounting methods and to extra work in crushing and in the different layouts. The bays have a production advantage with their higher inventory. The stills can be run on a regular steady schedule. The variances in day to day production are eliminated and a uniform quality pitch is produced. Full complete analyses are required only at intervals. This uniformity of pitch is of most importance to customers.

There was discussion on the bay pitch drilling angle for the blasting with no conclusions. Cleveland drills vertically at 0°, Ironton at 15° and Fairmont and Renton at 30°. Tamping is of importance in blasting to get the best results. Renton tamps with water, and Cleveland and Fairmont with pitch. Pitch contamination from the blasting wires is a problem. Cleveland is using prima cord from the surface down to the stick to control this.

The pitch crushers where used, are a bad source of dust within the plant, which is objectionable to operating personnel. This is controllable with water fog nozzles where water is not objectionable. There has been some use of water sprays and flooding on pans and bays this summer to gain on cooling rates and it has been successful. However, care must be taken where customers have water specifications.

Pitch drumming was discussed. The high costs of weighing individual drums was pointed out. Dr. Mootz related some test data showing statistically that with standard drums, filled to constant levels with controlled temperature pitch, it is not necessary to individually weigh the cans. Standard constant weights can be used. Foaming while filling would rule this out at Cleveland. Chattanooga has used foam control effectively to combat this. Lone Star uses a pump, with $1\frac{1}{2}$ inch hose and a 2 inch nipple with the discharge end cut at 45° to effectively eliminate this foaming. Maywood has been testing, with success, fibre containers for drummed pitch.

REILLY TAR & CHEMICAL CORPORATION

TO: See Below OFFICE: Chattanooga

FROM: Walter T. Varnell DATE: August 30, 1960

SUBJECT: PITCH HANDLING - CHATTANOOGA

To: Mr. W. W. Roberts	Renton	Mr. H. L. Finch	St. Louis Park
Mr. R. K. Nelson	Provo	Mr. K. J. Morrison	Granite City
Mr. C. F. Lesher	Ind.	Mr. George Jackson	Lone Star
Mr. T. E. Reilly	Ind.	Mr. P. A. Mari	Fairmont
Mr. M. Mitchell	Ind. Lab	Mr. C. A. Fisher	Maywood
Mr. H. R. Horner	Ind. Lab	Mr. J. C. Lenox	Cleveland
Dr. F. J. Mootz	Ind.		

Listed below is a brief summary of the method used in pitch manufacture and handling at Chattanooga.

I. Manufacture of Pitch

A. Method of Manufacture

(1) We make roofing pitch by straight run distillation. We blend 25% high carbon tar from Granite City with 75% low carbon tar from our normall suppliers to give a crude of 6-7% CS_2 insoluble. The stills are fired to [illegible] then the softening point adjusted by steaming in if needed. This gives a final pitch of 17-18% CS_2 insoluble. Approximately 25% distillate is distilled from the tar.

(2) We make no pitch by isothermal operation at the present time.

(3) We make electrode binder pitch (crude) by the cutback process. The hot leg is fired to 400 to 410°C to give a base pitch of 130 to 140°C cube in air softening point. The hot leg is allowed to soak for 10 hours then cut back with [illegible] to give a pitch with a softening point of [illegible] the still by pumping the [illegible] the same time using steam agitation. The steam agitation is allowed to continue for 10 minutes after the cut back [illegible] when the material is sampled.

(4) The only blending of pitch we do outside the stills is when we sometimes overshoot the softening point of roofing pitch in the cooler. We then cut back the pitch in the cooler by pumping heavy creosote oil, distillate after 300°C, or RT-7 to the cooler and mix with air agitation.

B. Still Cycles

(1) The stills are fired between 7:00 A.M. and 12:00 noon when making roofing or binder pitch.

(2) To make binder pitch base requires 10 to 12 hours distillation time. To make roofing pitch requires 8 to 9 hours distillation time.

Binder pitch requires a 24-26 hour cycle. Roofing pitch a 12 hour cycle.

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B. Still Cycles (Cont'd)

(3) In Manufacturing binder pitch, the softening point of the pitch is tested after the material has been cut back. The other analyses are run after the material has been transferred to the tank car.

In manufacturing roofing pitch, the CS_2 insoluble and softening point are run on a sample from the still. The softening point is checked again in the cooler then again from a composite sample taken from the pitch cans after the material is drawn from the cooler.

(4) The pitch residue is blown from the stills to the tank car or cooler with steam.

II. Handling Bulk Pitch

At present we make no bulk pitch at Chattanooga. In the past we have contracted the loading of core pitch or briquette pitch from the pitch bay to barge or rail cars.

III. Handling Liquid Pitch

We blend binder pitch in the still. The pitch is blown by steam pressure from the stills directly to the tank car. We use no intermediate tank.

IV. Drumming Pitch

We load pitch into drums by gravity through a 2½" pipe from the pitch cooler. We weigh the pitch after it has been loaded into the box car or truck. Small trucks are weighed on our plant scales, large trucks (semi-trailer) are weighed by the trucking firm and box car shipments are weighed by the railroad.

The drums are handled three times. Empty from truck or box car to storage, empty from storeage to pitch yard and loaded from pitch yard to truck or box car.

Yours very truly,

Walter D [illegible]

WTV:sw

TO: Mr. W. W. Roberts - Renton
Mr. R. K. Nelson - Provo
Mr. H. L. Finch - St. Louis Park
Mr. K. J. Morrison - Granite City
Mr. W. T. Varnell - Chatt.
Mr. G. H. Jackson - Lone Star
Mr. P. A. Neri - Fairmont
Mr. C. A. Fisher - Maywood
Mr. C. F. Lesher- Indpls. Off.
Mr. T. E. Reilly- Indpls. Off.
Mr. M. Mitchell-Lab.
Mr. H. R. Horner-Lab.
Dr. F. J. Nootz - Indpls. Off.

FROM: John C. Lemmx   OFFICE: Cleveland, Ohio

SUBJECT: PLANT MANAGERS' MEETING - PITCH HANDLING   DATE: September 12, 1960

PITCH HANDLING AT CLEVELAND

I - Manufacturing of Pitch

(a) Methods of Production

1.) Those pitches in which it is not necessary to build up the insolubles are made by a straight run distillation. At present these pitches are roofing, target, core, Ray-O-Vac, and Alcoa.

2.) Road tar base and 45°C R&B pitch are the only products that are being made by continuous distillation.

3.) On the blended pitches the initial charge to the still is heated to 410°C to 420°C and held for 2 to 4 hours at this temperature before adding RT-11 back to the still. The variation in the degree and length of soaking is dependent upon the degree of insolubles required.

4.) On the cathode pitches (lower softening points) the heat treated pitch is partially cut back in the stills with the remaining portion of the RT-11 required, being added to the cooler. On some occasions the pitch in the cooler is further cut back to adjust the softening point.

(b) Still Cycles

1.) Normally the stills are charged between 6 PM and 10 PM and then fired.

2.) The firing and heat treatment of the stills takes between 6 and 14 hrs., with refiring after testing another 2 to 4 hours.

3.) Both Sp.Gr. and softening point tests are run, and an average of three softening point test per batch are made

4.) The pitch residues are blown out of the stills to the pitch coolers with steam pressure.

II - Handling Bulk Pitch

1.) In our pole barn bay we believe we can add 2" of 105°C cube in air pitch per day in the winter months, but try to limit this to 1" per day in the warmer summer months. With core pitch, 150°C cube in air softening point, we would feel safe in adding 3" per day in the winter months and 2" per day in the summer months. Sprinkling the pitch with water has proved to aid quite a bit in accelerating the cooling rate.

2.) From the bays when the pitch is quite deep we have used air hammers, dug the pitch with the front end loader, and at other times blasted the pitch. The blasting is done by drilling vertically with an air operated drilling hammer with a water cooled bit. The holes are drilled on about 6' centers four feet from the face and to within 1' of the bottom of the bay. Single half pound sticks of 60% gelatine dynamite are set off by primer cord and cap. The hole is tamped with damp pitch dust.

3.) Our practice has been to pump between 4" to 5" into our two elevated pans and in the summer months, start running water over the surface several hours after the pitch is in the pans. With 110°C cube in air pitch and above we can load this 24 hours after pumping to the pans in summer months, 18 hours after pumping in the winter months. On 100°C cube in air pitch the two cooling times being increased to 36 and 24 hours.

III. - Handling Liquid Pitch

1.) The stills are always blown to a cooler and the tank cars are loaded by a pump through a jacketed 3" line. We do some blending in the cooling tank and quite frequently, we blend pitch from two different liquid pitch coolers, to make minor adjustments to the softening point.

IV - Pitch for Drumming is drawn off by gravity through a steam jacketed 3" line with two chiksan joints to allow movement of the line from drum to drum. At present the bulk of the drums are moved to storage without weighing (we keep 30 tons on inventory of weighed pitch). Batch numbers are stencilled on and underwriters' labels pasted on at the time the drums are moved to storage. On some accounts the drums are loaded to trucks without weighing individually with the shipping weight being determined by the truck weights. On some accounts the individual drums must be weighed and the weight stencilled on the drum. The loaded drum is normally handled twice, once to storage and once to loading. Although when possible we load pitch from the drumming area directly to trucks.

Very truly yours,

John Lenox

John C. Lenox

JCL/ek

[illegible]

From: P. A. Ward Date: September 7, 1960

SUBJECT: PLANT MANAGER'S MEETING -- PITCH HANDLING

To: Mr. W. W. Roberts, Renton
Mr. R. K. Nelson, Provo
Mr. P. L. Finch, St. Louis Park
Mr. K. J. Morrison, Granite City
Mr. W. T. Varnell, Chattanooga
Mr. C. A. Fisher, Maywood
Mr. C. F. Lesher, Indianapolis
Mr. T. E. Reilly, Indianapolis
Mr. M. Mitchell, Reilly Laboratory
Mr. H. R. Hosner, Reilly Laboratory
Mr. H. Jackson, Lone Star
Mr. J. C. Lemon, Cleveland Plant

Only hard pitch made at Fairmont is 110°C. softening point. It is made straight run from a tar ranging from 5.5 to 9.0% insoluble in CS_2. If any blending is necessary, it is done in a 30,000 gallon cooler equiped with mechanical agitation.

Pitch stills are operated on a 24 hour cycle. Stills are fired at 5:00 P.M., and take 9 to 12 hours to finish. Firing is stopped at a still temperature of 355 to 360°C. and balance of oil is removed with steam.

Pitch is sampled early next morning. Only softening points are checked daily. Adjustments are made before pitch is blown from stills to cooler. Pitch is cooled to 200°C. and pumped to storage bins. Once a week a complete analysis is made on a sample taken from the cooler.

We have not [illegible] experimented on maximum thickness of pitch to the bays. Sufficient cooling is obtained with 2½ inches per day. On cold winter days as much as four inches have been put into the bays without encountering any difficulty. Bays are filled to a thickness of approximately five feet.

[illegible] drilled using a Gardner drill with water cooled bit. Drill rod is mounted [illegible] have been obtained [illegible] have a rated velocity of approximately [illegible]. Pitch may be drilled at any time after last batch in in bay.

After blasting, pitch is picked up with a Hough payloader, dumped into a hopper and conveyed directly to hopper cars.

Liquid pitch is blended in stills or cars. Due to low carbon content, the 353-A method is used. Base pitch is run to a softening point of 125°C. and cut back with an R.T.-7 to R.T.-12 tar. Part of the cut back is done in the stills, then pitch is brought into specifications in cars. Transfer to cars is made by pumping.

Only pitch drummed is roofing pitch. It is pumped from cars to drums. If drums are uniform size, several are weighed and an average weight established. When drums vary in size, such as nested drums, they are weighed after cooling and stencilled. Next and final movement of the pitch is for shipment. After filling drums may be handled once or twice.

Very truly yours,

P. A. Ward

P. A. Ward

803386

REILLY TAR & CHEMICAL CORPORATION

TO: See Below OFFICE: Granite City, Ill.

ROM: K. J. Morrison DATE: September 6, 1960 (Dict. Sept. 2)

SUBJECT: PLANT MANAGERS' MEETING - PITCH HANDLING

To: Mr. W. W. Roberts, Renton
Mr. R. K. Nelson, Provo
Mr. H. L. Finch, St. Louis Park
Mr. W. T. Varneil, Chattenooga
Mr. G. Jackson, Lone Star
Mr. P. A. Neri, Fairmont
Mr. C. A. Fisher, Maywood
Mr. J. C. Lenox, Cleveland Plant
Mr. C. F. Lesher, Indianapolis
Mr. T. E. Reilly, Indianapolis
Mr. M. Mitchell, Reilly Lab.
Mr. H. R. Horner, Reilly Lab.
Dr. F. J. Mootz, Indianapolis

In response to Dr. Mootz's letter of August 24, outlined below is the Granite City method of handling pitch:

I. Manufacture of Pitch:

(a) Method of Production:

1. All of the pitch manufactured at Granite City is made through a straight-run production. Due to the various types of tar available for charging, we sometimes preblend tars from Granite City Steel; U. S. Steel, Clairton; and Youngstown Sheet & Tube in a tank prior to charging to the stills, and in some instances we blend Great Lakes Carbon tar with Granite City Steel tar in the still itself; however, all of these tars are made on the straight-run basis to the desired melting point.

2. We do not make any continuous distillations of tar products.

3. The only time any blending is accomplished in the stills is when a product has been overshot and it is necessary to cut back with oils to bring it to the desired softening point, mainly in the manufacture of Roofing Pitch.

4. In the manufacture of Anode Pitch for Harvey, we run our stills to 110°C. softening point and blow to a pitch cooler. Gary pitch is added to the cooler to reduce the softening point to approximately 99°C., where it is agitated, cooled and pumped to a pitch bay. This is the only type of pitch which is blended after it leaves the stills.

(b) Still Cycles:

1. When firing for Anode and Soderberg Pitch, we normally initiate firing at 3:00 a.m. This is to facilitate proper timing for the still sample to be run by our laboratory, which works from 8:00 a.m. to 5:00 p.m. All other types of pitch; i.e., Roofing, Core and Target are fired as soon as the stills are recharged.

2. Firing time for Roofing Pitch and Anode Pitch averages nine hours. Target and Electrode Pitch runs 11 hours, and Soderberg Pitch runs 12 to 14 hours because of the necessary laboratory time to make a finished product within the still.

3. Testing:

   (a) Anode Pitch - Softening point is run on the residue within the still; softening point is run on the pitch in the cooler; after cut back, we run the softening point, quinoline insoluble, ash and benzol insoluble; weekly, we run the softening point, quinoline insoluble, ash and benzol insoluble on the previous week's accumulation in the bay.

   (b) Soderberg Pitch - Softening point is run on the pitch within the still. When the pitch is in a tank car, we run the softening point, quinoline insoluble, coke value and toluene insoluble.

   (c) Roofing Pitch - Softening point is run on the pitch in the still and when the pitch is put into drums, we run a softening point and foaming test.

   (d) Core Pitch - Distillation end point is determined by specific gravity of distillate, a softening point is run on the pitch in the cooler and a representative sample is taken of the static bay, on which a softening point is run.

   (e) Target Pitch - Softening point is run on the pitch in the still. Another softening point is run on the pitch in the cooler, and a representative sample of the static bay is taken, on which a softening point is determined.

4. All of the pitch is blown from our stills by steam pressure.

II. Handling Bulk Pitch:

1. We have been informed by the Engineering Department that we may normally put two inches into our pitch bays and retain a cooling effect of the pitch in the bay, but we suspect this varies, depending on atmospheric temperature and conditions for deflecting sunlight. It has been necessary in the past week to install water sprayheads over our pitch bays to assist in cooling the pitch within the bay. We must await future developments to determine if this will be a satisfactory solution to overcome the direct rays of the sunlight during the summer weather.

2. For the purpose of digging Core and Target Pitch, we have found it quite satisfactory, using a Cardox wagon drill, to drill a hole in the pitch to approximately six inches above the concrete floor and to place one-third stick 40% gelatin dynamite with an electric blasting cap attached to shatter the pitch. The fractured

pitch is then picked up by a Hough payloader and placed on a conveyor for either storage within our loading bin or direct discharge into the shipping truck. In the case of Foundry Pitch, it is necessary for the payloader to pick up the shattered pitch and drop it into a hopper above a crusher, which requires an additional man to prod the pitch lumps through the crusher, from which it is conveyed into the storage bin. This pitch is then subjected to oil treatment prior to being conveyed into the shipping truck.

In the case of Anode Pitch, we have had severely adverse conditions, due to the pitch not being completely solidified prior to attempts to dig it. In these cases, we have attempted to break up the pitch through the use of air hammers, drilling and dynamiting, Hough payloader, Caterpillar tractor, highlift, and large, automotive, hydraulically-operated, concrete breaking equipment. None of these methods has been satisfactory and they were purely experimental. We believe that with a roof over our bays to deflect the rays of the sun and with the additional help of our water sprinklers, we will be capable of drilling, dynamiting and loading with our payloader this type of pitch from our bays.

3. We do not have any type of pan equipment for use in the pitch production operation.

III. Handling Liquid Pitch:

1. In the manufacture of Soderberg Pitch, the still is discharged by steam pressure to a cooler equipped with an air condenser and then pumped (as hot as possible) into a tank car for shipment.

Roofing Pitch is discharged from the stills by steam pressure to a storage tank (noninsulated) equipped with an air condenser and then pumped to an insulated 4,500-gallon tank for gravity loading into the customers' trucks.

IV. Drumming Pitch:

Pitch is drawn by gravity through a 2½" steam-traced line into drums. After cooling sufficiently to where they can be moved, these drums are hauled by hand trucks for a distance of approximately 150 feet to the warehouse scales, where they are weighed and set up for shipment, where they will eventually be hand-trucked again for an additional 100 feet to either box cars or trucks. At the time of weighing, the date of filling and the weight are stencilled on the drum and Underwriters' labels are attached. Empty drums are received in box cars, unloaded to storage and subsequently carried to the filling station.

Yours very truly,

KJMorrison

M:VS

REILLY TAR & CHEMICAL CORPORATION
REPUBLIC CREOSOTING COMPANY

TO: See Below OFFICE: Ironton, Utah

FROM: R.K. Nelson DATE: September 6, 1960

SUBJECT: Plant Managers' Meeting - Pitch Handling

TO: Mr. W.W. Roberts, Renton
Mr. H.L. Finch, St. Louis Park
Mr. K.J. [illegible], Granite City
Mr. W.T. [illegible], Chattanooga
Mr. G.H. Jackson, Lone Star
Mr. P.A. [illegible], Fairmont
Mr. C.A. [illegible], Haywood
Mr. J.C. Lenox, Cleveland Plant
Mr. C.F. Lesher, Indianapolis
Mr. T.E. Reilly, Indianapolis
Mr. M. Mitchell, Reilly Lab.
Mr. H.R. [illegible], Reilly Lab.
Dr. F.J. [illegible], Indianapolis

I. Manufacture of Pitch

A. Method of Manufacture

(1) Soft pitches up to and including roofing pitch are made in batch stills. Harder pitch, electrode binder and foundry pitch are made in the continuous stills. We usually blend soft pitch in the stills and there is no blending of hard pitch.

B. Still cycles

(1) Batch stills start at 12:01 A.M.

(2) With our very wet tar 12 to 14 hours are required to run batch stills to roofing pitch, which must be cut back and adjusted to proper melting point the following day.

(3) Testing - the operators use a hydrometer on oil when getting near the stage where pitch should be close to desired melting point. When the [illegible] gravity of oil is right [illegible] [illegible] stopped and the pitch is [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] testing [illegible] cutting back pitch to proper melting point is done in the laboratory.

(4) The finished pitch is dropped to [illegible] [illegible] [illegible] through a 2" line equipped with [illegible]; sometimes [illegible] a little air pressure on still and when combining two stills to one lot in a single still, we blow with air from one still to another. Occasionally we drop roofing pitch to coolers, a couple of old Reilly Stills located 15 feet from cleanout end of batch stills.

Hard Pitch:

(1) Isothermal stills are on a five day continuous operation (24 hour daily), starting at 12:01 Monday.

(2) Tar pumps are stopped Friday afternoon and stills finish on afternoon shift Friday, closing down at midnight Friday. 303390

(3) Testing - operators use copper bar to test periodical samples of pitch before it is pumped to cooler. Entire operation controlled by a 6 point electronic potentiometer which records temperatures at strategic points of the operation. The laboratory checks pitch samples from the 33,000 gallon capacity cooler three a day for softening point and also on each lot dropped to bays. Insolubles in benzene and quinoline are run on cooler lots throughout the run. Full bays are sampled and complete analyses are made representative of 2,000 to 3,000 tons of electrode binder pitch.

(4) Hot pitch is pumped continuously to the 33,000 gallon capacity cooler (1320 gals. per ft.) and when pitch level reaches 15 to 20 feet, we drop through 8" Nordstrom valves to two bays, alternately, sometimes simultaneously. The temperature of the pitch dropped to bays is around 250°C. and each drop levels out in the bay 2 to 2½". Since the next drop is 18 to 24 hours later, the pitch has time to cool. Furthermore, as we have two to three weeks between runs of the isothermal unit, we have had no cooling problems summer or winter.

II Handling of Pitch:

(1) This is answered above in (4)

(2) Holes are drilled into 6 ft. depth of hard pitch to within 5" or 6" of floor, with a Cardox Wagon Drill, at a 15 degree angle, drilling towards the face at approximately 4 ft. centers. We have recently started using an improved auger and water swivel. (Mr. C.F. Lesher has a sketch of the water swivel and data on the auger and drills). We use a full 1-1/8" x 8" stick of Black Diamond C. blasting powder (American Cyanamid) for each hole, set off by an 8 ft. electric cap. Cost of blasting materials per hole is approx. 28 cents and since starting to blast in May 1953, we have bought approximately $1050.00 in blasting supplies. The tonnage of electrode pitch shipped during the period ---- 17,738.30 tons.

(3) We do not use pans at Ironton, Utah. With our large outside pitch bays, each measuring more than 8,000 to 11,000 sq. ft. with 6 ft wood walls, we run a long time before shipping from any particular bay. We have been shipping around 700 tons of electrode binder per month, so it would take 4 months to empty the largest bay which holds approximately 3,000 tons of pitch when full.

III We have not loaded tank cars with liquid pitch at Ironton, Utah.

IV Drumming Pitch - Here we believe we [illegible] [illegible] [illegible] [illegible] [illegible] for Government jobs requiring [illegible] [illegible] time and [illegible]. We [illegible] how we [illegible] pitch from [illegible] [illegible] we do not weigh [illegible] [illegible] age. When shipping a [illegible] Weight for invoicing and [illegible] on a gross for net [illegible]. [illegible] are weighed [illegible] on a truck scale of sufficient capacity, as our small 10 ton capacity wagon scale is inadequate for most loads; hence large truckloads are weighed on outside scales. We always compare these outside weights with our calculated weights based on the number of drums and our close estimate of what each one weighs. Drums are handled 3 or 4 times, once when unloading empties to the storage shed, next to bring back to the filling dock and then handling full drums to railroad cars or trucks. We use an old steam operated stiff-leg derrick, pick up one drum at a time and swing it into the doorway of a box car or onto a truck. Usually stenciling is done in the doorway of the railroad car. There are times when we must perform an extra handling to move drums to a storage area to make room [illegible] to keep this extra handling to a minimum [illegible]. We use old [illegible] drums for pitch containers and have some extra expense repairing and straightening. They should be repainted but we have not been doing this as it would add considerably to cost of drumming. They are not good looking containers, especially as most of them go out with old Union Carbide stencils still showing on the sides.

Very [illegible]

803391

Pitch Handling
(Continued)

Ironton, Utah
9-6-60

SUPPLEMENT

II - Hard Pitch: Handling of Pitch

(2) The loading operation consists of picking up broken, unsized pitch from the blasted face with a Hough Model HH Payloader equipped with a 1 cubic yard bucket, and traveling across the bay to railroad tracks where pitch is dumped onto a Fairfield Coal Unloader that sits almost flush with the floor of the bay. The coal unloader carries the pitch onto a 30 ft. Fairfield Drag Conveyor, with an enlarged hopper on the receiving end, from where it moves up and over the topside of hopper type cars. Loading is slowed up somewhat when the payloader has to travel to the far corners of our large pitch bays.

We use a three and four man crew to load pitch to railroad cars. One man drills and blasts, the second operates the payloader and the third moves cars, levels off loads and services the conveyors. The fourth man, used on occasions during hot weather, wets down the pitch dust with a hose water spray.

Drilling and blasting is [illegible] ahead of the loading operation; sometimes as much as four rows of holes are drilled back from the loading face but we never blast more than two rows ahead of the loading. This may not be good practice but it keeps a man profitably employed when he otherwise has time to spare. We have found a relatively dry hole blasts better than a wet hole. In other words, [illegible] tends to diminish the shattering effect of the blast. The blast holes are [illegible] with [illegible]

[illegible]

[illegible]:s

REILLY TAR & CHEMICAL CORPORATION

TO: See Below OFFICE: Lone Star, Texas

FROM: Geo. H. Jackson DATE: September 1, 1960

SUBJECT: PLANT MANAGERS MEETING
PITCH HANDLING - LONE STAR, TEXAS

To: Mr. W. W. Roberts - Renton
Mr. R. K. Nelson - Provo
Mr. C. F. Lesher - Ind.
Mr. T. E. Reilly - Ind.
Mr. M. Mitchell - Ind. Lab.
Mr. H. R. Horner - Ind. Lab.
Dr. F. J. Mootz - Ind.
Mr. H. L. Finch - St. Louis Park
Mr. K. J. Morrison - Granite City
Mr. Walter T. Varnell - Chattanooga
Mr. P. A. Neri - Fairmont
Mr. C. A. Fisher - Maywood
Mr. J. C. Lenox - Cleveland

Listed below is a brief summary of the method used in pitch manufacture and handling at Lone Star.

I. Manufacture of Pitch
A. Method of Manufacture
(1) The method of manufacture is straight run, batch method.

(2) No continous operation.

(3&4) The Tar is blended in stills and outside of stills, depending on convenience.

B. Still Cycles
(1) Time starting still 12:01 A.M.

(2) Length of distallation period 12 - 14 hrs. Still cycle time is 24 hrs.

(3) Testing: Softening point only. One to two test may be required.

(4) Residue is blown to cooler.

II. Handling Bulk Pitch

Lone Star has no bulk handling.

303393

III. Handling Liquid Pitch

(1) Very little liquid pitch is shipped. None has been shipped in cars. We have made shipments in tank trucks. Pitch is blown from cooler to truck. Any blending required is done in cooler.

IV. Drumming Pitch

We use air pressure on cooler and drum thru $1\frac{1}{2}$" flexible metal hose. We use all new drums, fill to capacity and ship as 540# drums. We do not weigh all drums, just enough to check weights occasionally. After filling, drums are handled only once, for loading out.

Very truly yours,

Geo. H. Jackson

Geo. H. Jackson

GHJ/clh

TO: See Below OFFICE: Maywood

FROM: Mr. C. A. Fisher DATE: August 31, 1960

SUBJECT: PLANT [illegible] - PITCH HANDLING

TO: Mr. W. H. Roberts, Fenton
Mr. R. K. Nelson, Provo
Mr. H. L. Finch, St. Louis Park
Mr. K. J. Morrison, Granite City
Mr. W. T. Varnell, Chattanooga
Mr. G. Jackson, Lone Star
Mr. T. H. Reilly, Office
Mr. P. A. [illegible], Fairmont
Mr. M. Mitchell, Laboratory
Mr. J. C. Lenox, Cleveland Plant
Mr. C. F. Lesher, Office
Dr. F. J. Mootz, Office
Mr. H. R. Horner, Laboratory

At Maywood all pitch is made in batch stills. When it is necessary to make Roofing Pitch from low carbon tar we take off and put back three or four pans of oil to build up the CS_2 Insoluble of the pitch. All other pitches are straight run with a minimum of adjustments.

All stills are started at 5:00 AM so that the first sample of pitch can be sent to the laboratory between 11:00AM and noon. After the pitch is in specification the stills are usually allowed to cool until 5:00 PM before pumping. We pump after 5:00 PM to minimize the amount of oil vapors we might deposit on the automobiles in our parking lot.

The stills are sampled after the distillate has a specified specific gravity. This specific gravity is adjusted frequently to compensate for changes in the tar. As a rule we make one small adjustment (5? - 75 gallons of oil put back into the still or taken off) and recheck the softening points in the lab.

All pitch is pumped from the stills into storage tanks or [illegible] coolers. [illegible] cooler by [illegible] ing point is [illegible]

We fill our pitch drums [illegible] through a 12 mesh screen. Each drum is filled to [illegible]. Before filling each drum is stencilled with lot number, weight, and an identifying code number.

We have weighed a pallet load of drums to a constant weight rather than weighing each individual drum but this is not our standard practice.

The filled drums stay on the pallet until they are shipped. The pallet is moved twice before shipment. It goes from the filling scale to our cooling area. When cool, the pitch is moved to storage where it is stacked three high.

Very truly yours,

C. A. Fisher

CAF:lm

303395

Inter Office Correspondence
REPUBLIC CREOSOTING COMPANY

To: See Below

Office: Renton

From: W. W. Roberts

Date 8-29-60

Subject: Plant Manager's Meeting - Pitch Handling

To: Mr. R. K. Nelson - Ironton
Mr. H. L. Finch - St. Louis Park
Mr. W. J. Morrison - Granite City
Mr. W. T. Varnell - Chattanooga
Mr. G. Jackson - Lone Star
Mr. P. A. Neri - Fairmont
Mr. C. A. Fisher - Maywood
Mr. J. C. Lenox - Cleveland
Mr. C. F. Lesher - Indianapolis
Mr. T. E. Reilly "
Dr. F. J. Mootz "
Mr. M. Mitchell - Reilly Lab
Mr. H. R. Horner

We make now, only a pre-bake electrode binder at Renton. This is a blended pitch with the blending done in our 25000 gallon agitated pitch cooler. The base pitch is about 132° c/a, and the soft pitch is about 80° c/a.

Base pitch is blown from the stills to the pitch cooler at 7:00 A.M. The stills are immediately reloaded with dry tar and fired. Distillation is usually complete by 3:00 P.M. The pitch then stands in the stills hot until the next morning. Soft pitch is also started at 7:00 A.M., is finished by early afternoon, and blown to the cooler to finish the batch started with the previous days base pitch.

Base pitch is run on a time and temperature cycle with no control of softening point. When it is blown in the morning, the stills are sampled. From the softening points of these samples it is determined how much oil should be taken off of the soft pitch that day to make a satisfactory batch (4 stills per batch). Many of you will recognize that this is simply Harry Holstrom's old cycle.

We have three pitch bays, each 40 x 150'; which are normally filled to a depth of about 4'. If pitch from the cooler is dumped at not over 110°C, we can add up to 5" per day to the bays and still get adequate cooling on a shipping schedule of something over 1000 tons per month. Shipping uniformly, three weeks to fill, three weeks to cool, and three weeks to ship a bay works out fine.

Pitch is prepared for shipment by blasting. We drill with a water cooled bit, using a Cardox wagon drill, and working from the top of the bay. The hole is inclined towards the face at 30° from the vertical. One stick of 20% powder is placed in each hole, and fired with an electric blasting cap. The holes are on about 4' centers. We tamp with water only. We shoot only immediately behind the shipping face, so that the pitch tends to move horizontally rather than vertically when shot. After shooting, the pitch is loaded into small dump trucks with a "payloader" type of tractor, and trucked around to our loading ramp, where it is dumped into gondolas.

We handle no liquid pitch, and drum small lots only very rarely.

Very truly yours,

W. W. Roberts

303396

REILLY TAR & CHEMICAL CORPORATION
REPUBLIC CREOSOTING COMPANY

TO:	See Below	OFFICE:	St. Louis Park
FROM:	H. L. Finch	DATE:	September 7, 1960

SUBJECT: PLANT MANAGER'S MEETING - PITCH HANDLING

TO: Dr. F. J. Moetz - Indianapolis
Mr. T. E. Reilly - Indianapolis
Mr. C. F. Lesher - Indianapolis
Mr. M. Mitchell - Indianapolis Lab.
Mr. H. R. Horner - Indianapolis Lab.
Mr. C. A. Fisher - Maywood
Mr. W. W. Roberts - Renton
Mr. R. K. Nelson - Provo
Mr. K. J. Morrison - Granite City
Mr. W. T. Varnell - Chattanooga
Mr. G. Jackson - Lone Star
Mr. P. A. Neri - Fairmont
Mr. J. C. Lenox - Cleveland Plant

At St. Louis Park we manufacture electrode binder pitch for Harvey Aluminum and Anaconda Aluminum, who use the Soderberg Electrodes for the extraction of aluminum. The specification as to melting point has a finished product range from 95° to 100°C, which is accomplished by blending outside of the stills.

In the manufacture of anode pitch, our stills are fired up at 3:00 P.M. in the afternoon and are finished up by 5:00 A.M. the next morning. With our present blend of tar we are after a melting point of 120°C pitch to be blown into our mix tank.

Since we have been operating with a variety of tar sources, the tar blend is sampled before filling the stills whenever a new mixture is made. The sampling is next done after the stills have been blown to the mix tank and thoroughly mixed; the sample being brought to the lab at 8:00 A.M. It is then determined the amount of soft pitch to be added to bring the blend to 100°C. A second sample is taken to determine the add necessary to result in a pitch of 98°C which, after cooling, should sample out of the bays at 98.5°C.

From the mix tank the anode pitch is pumped into steel bays at a temperature of 200° to 224°C at 4:30 to 6:30 in the evening. Each of the three steel bays will hold one car (45,000# to 51,000#) of pitch at depths of approximately 6". Our summer cycle is - pour 2 bays Monday, Wednesday and Friday and pour 1 bay Tuesday and Thursday, Monday pouring to be dug Wednesday, etc., giving a minimum of 40 hours in the bays. Winter, "In the Land of Sky Blue Waters", changes our cycle - empty mix tanks 2:30 to 3:00 P.M. and dig the next day, a two bay summer run being spread over three bays, giving a cooling time of sixteen to twenty hours in the bays.

The hard pitch is broken up in the bays with manually operated air chisels, lumps to be held to 8" maximum. The broken pitch is loaded into box cars directly from the bay by payloader.

Liquid cathode pitch with a melting point of 65° to 70°C is blown directly from stills to tank cars. No blending needed on a normal run.

Roofing pitch is received in tank cars from U. S. Steel Corporation at Gary and is unloaded to our hot roofing pitch tank for blending, if needed; it is then available for loading direct to trucks or for drumming.

Drumming is accomplished by spreading the drums out in a semi-circle at the full extention of the gravity fill pipe. As the outside semi-circle of drums is completed, empty drums are placed inside the completed semi-circle and the chute shortened. The pitch in the drums is allowed to harden and the drums are then removed from the filling area, weighed and placed in the storage area to be loaded.

Very truly yours,

(Signed H. L. Finch)

HLF:ep

Copy:lc

VII. STEAM UTILIZATION AND CONSERVATION

Dr. Mootz discussed the problems of efficient steam utilization and conservation. Of our major operating costs, steam saving by eliminating wastage is one of the major areas where we can make savings without hurting ourselves. In 1958, during the lag in sales, we started conservation programs at a few plants with very apparent and successful results. Steam cost is a silent expense. It is purchased or generated steadily and regularly and can increase unobtrusively. Steam conservation must be viewed like safety programs, when the plant manager is interested the employees will also be interested. We have learned that major decreases in steam costs will result when the boilers are shut down over the weekends in the summer months. The plants should aim toward having their steam piping in proper condition to save losses.

Among the plants, steam costs ran from eight to seventeen percent of the plant operating and administrative expenses. The total cost to the refineries in 1959 for steam alone was $620,000. The chart of steam cost breakdown on page 39 shows the individual plant steam costs. The ratios of steam costs to sales are shown on the chart on page 46. A steam cost greater than 5½% of sales is too high. The graph on page 40 of steam cost as percent of sales vs. percent profit, although intended only to show a trend, does bear out a relationship that high steam expenses eat into profit. It appears that a good portion of refinery sales are tied intimately to the aluminum industry through electrode pitch. And, indications are that aluminum production may fall off slightly in the near future. Our sales will suffer and we will need to carefully watch expenses. We should set goals [illegible] to decrease our steam costs by 10%. If we reach this goal, we should set another goal of another 10%.

We need to organize programs within the plants to promote steam conservation. One effective and proven method is to have a specific man responsible to the manager for steam consumption. In most cases this man need not be an engineer, in only two or three of our plants is the size of the operation large enough to warrant an engineer. This man should investigate where and how we can save steam. For effective control we need to measure steam at both the points of production and points of consumption. The measurement is necessary to indicate the efficiency of both those operations. At most of our plants we have only a vague guess at the quantity of steam being generated or consumed. The operation is assumed to be efficient, but only if measured can we be sure that progress can or cannot be made.

This method of organization was promoted at Chicago, where one man spends 20 to 30 minutes every morning checking tanks and keeping a record whether steam is on or off the tanks, and checking whether the steam is actually necessary. By this daily check, it is possible, if conditions warrant, to cut steam off tanks being heated unnecessarily or to cut off entire sections of the plant.

It was pointed out that at many plants, tar handling could be arranged to take advantage of the suppliers heat. If heat in the incoming tar could be retained by means of insulated tar tanks or by proper scheduling of tankage, putting excess in dead storage and using a working tank, steam used for reheating could be eliminated. Ironton, Cleveland, Maywood, Chattanooga, Fairmont, and Lone Star all received tar direct from suppliers without lengthly transportation.

Mr. Horner noted that the break-even point on tank heating to justify insulation is 20%. That is, if the tank of material is kept hot more than 20% of the time, the cost of installing insulation is justified. It was concluded that the previously mentioned tank heating record would be kept by the plants and a monthly summary would be sent to the engineering department who would check for justification of insulation. This summary would also show the periods under which the tanks actually needed to be kept hot, as well as whether it was being heated. It should include a temperature estimate of the tank and an approximation of the steam consumption, by line size and approximate valve setting.

The question arose of stratification in a tar storage tank without agitation where tar is added regularly. The only experience has been at Renton where in barges with high water content, varying temperatures caused varying water contents.

A number of specific steam conservation cases were discussed. Renton needs a manhole heater in their tar storage before the next barge arrives. They currently keep tar hot and consume steam continuously in a two-million gallon tank. Cleveland has found they need a tar storage temperature of 100°F to get tar from their tanks to the pumps. No plants have made progress towards getting data on temperatures along the lines pointed out by Mr. Jackson last year, where the oil or tar in storage built up its own insulation layer and the material lost little heat over many months stable storage.

TABLE VII A

ANNUAL STEAM COST

Plant #	2	4	5	6	10
Labor - Operation	$11,[illegible]88	$15,335	$18,616	$ 8,062	$15,319
- Miscellaneous	1,9[illegible]8	635	8,156	1,929	1,072
+ Maintenance					
Supplies + Utilities	2,6[illegible]5	1,779	10,769	8,300	1,976
Fuel	5[illegible],[illegible]25	30,875	41,500	17,264	14,[illegible]48
Overhead	5,[illegible]3[illegible]	9,059	14,749	8,548	15,422
1959 Total Cost	73,518	57,682	93,790	44,103	48,137
1958 Total Cost	84,[illegible]5[illegible]	62,331	97,683	46,526	49,458
Fuel - % of Total	67.[illegible]%	53.5%	44.[illegible]%	37.1%	29.8%

Plant #	1	3	7	8	Total Reilly
1959 Total Cost	$[illegible]2,[illegible]31	$152,819	$9,846	$27,453	$620,029
1958 Total Cost	[illegible]4,522	145,517	8,038	23,289	592,117

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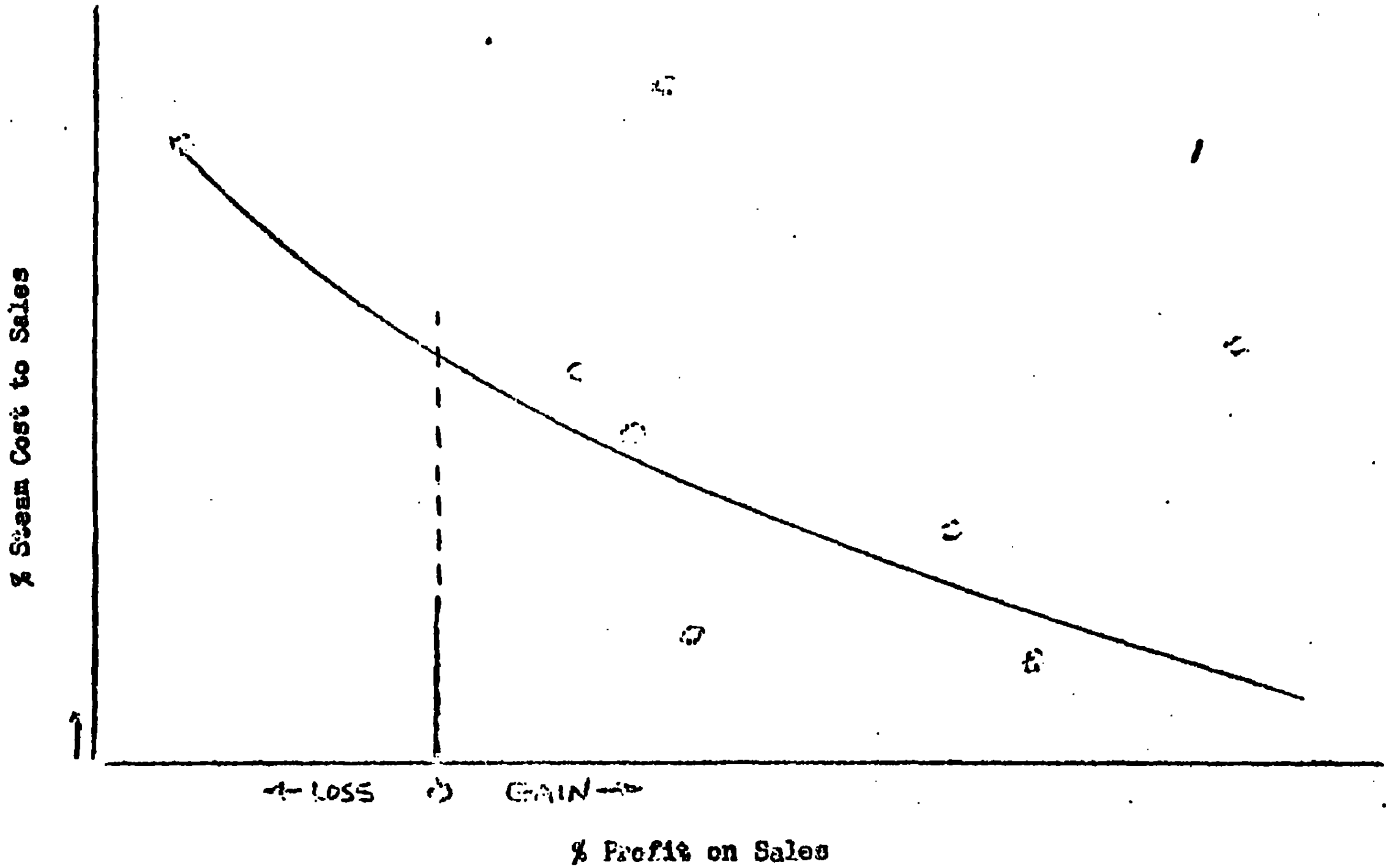
CURVE VII B



VIII. COMMUNITY RELATIONS

Mr. R. J. Boyle discussed the problem side of the Plant's relations caused by our fume, dust, smoke, and odor emission. Many of these cases or complaints can be handled immediately most effectively by the plant manager without advice of the engineering department or Mr. Boyle. The infrequent accidents can be passed over, but it is the frequent nuisances that will arouse a neighborhood. If the complaints are not satisfied immediately. The people will become excited, the furor will spread, and they will go to the authorities and no one is ever mutually satisfied.

As a typical example the current case at St. Louis Park was discussed. The plant has regularly received occasional complaints from a specific neighbor about smoke and odors when the wind directions were right. They had always been able to appease him. However, another industry, a few months ago wanted to install a parking lot. There was a zoning problem and the neighbors formed an association to remonstrate against the zoning variance. Then there was a complaint on our fumes that went to the association. The association happened to visit our plant while they were generating pitch fumes. Mr Finch talked to them, unsuccessfully. They went to the city hall, where a new city manager was receptive to their complaints. The city and state health departments became involved. The health department visited us, were modified and they appeased the association. However, interest is now aroused and the plant now has petty complaints about any smoke generation from any source irregardless of how small.

The cycle at Maywood has been similar. The odors are not the original [illegible] of complaint. When smoke stops they then complain about the odor and smoke. An explanation of this is that smoke is [illegible] the only specific legal complaint. There are now ordinances against smoke but none concerning odor. We can expect such legislation in the future.

The charge of plant insightliness is often made by neighbors aroused by other complaints. Tree planting is a solution to this, and all plants should make efforts in this direction. The unsightliness charge is often due to disorderliness, a neat and orderly and painted plant will counteract this charge. Maywood has improved their housekeeping, by using a dumpster trash collection system with bins spotted strategically throughout the plant for trash disposal.

Noise has been a cause of complaint at St. Louis Park also. The source was their ejector which has been corrected. Cleveland also remedied noise complaints by muffling their tube stills. Dust has not been a source of complaint to anyone but ourselves. As discussed, in pitch handling, the pitch crushers are objectionable from the dust standpoint, but apparently the dust does not blow on to the neighbors. Waste water and ground water contamination have been a source of complaints. Indianapolis has current cases which have been submitted by us to the authorities.

Mr. Horner commented that it is of value to confer with the authorities when making changes or improvements. When we work with the authorities we have their support against complaints.

IX. COST DATA

Current comparative cost data for the various plants were again presented. The Table on page 44 shows the plant operating expense distribution for 1959. This indicated again that the material costs run from 70 to 85% and the operating and administrative costs from 15 to 30%. The plant manager has direct control of only a portion, or approximately 10 to 20% of his costs. Those that he can influence are wages and salaries, still fuel, utilities, maintenance and tankcars.

The two charts on pages 45 and 46 compare the ratios of plant expenses to sales for the plants for the last three years. These ratios of operating labor, variable overhead, steam and maintenance were those suggested that the managers follow and use for control. During the year a start was given to the managers in tabulating these ratios. These continue to be good indicators, to point for the manager where problems are developing. When sales fall, these ratios will rise and the costs must be decreased. The charts on page 47 show the batch still unit costs for 1959, page 48 the isothermal still unit costs for 1959, page 49 a summary of some of the batch still costs and page 50 some details on batch still costs. The charts on page 51 summarize the pitch handling costs at the various plants by the methods of handling.

TABLE IX A

[illegible] OPERATING EXPENSE DISTRIBUTION

Materials	[illegible]	[illegible]	70.10	63.65	78.45	72.50	81.28	75.35	77.30	79.00
Operating & Administrative Expense	[illegible]	[illegible]	29.90	36.35	21.55	27.50	18.72	24.65	22.70	21.00
Wages & Salaries	[illegible]	[illegible]	[illegible]	49.25	47.80	43.50	57.10	41.20	47.50	60.90
Still [illegible]	[illegible]	[illegible]	4.00	5.46	5.47	2.67	6.20	13.07	6.30	2.23
Utilities	[illegible]		4.08	3.08	2.00	5.17	2.27	2.37	1.32	1.61
Steam [illegible] Fuel	[illegible]	[illegible]	8.49	11.52	15.82	11.35	8.05	15.40	9.34	9.59
Operating Supplies	[illegible]	[illegible]	2.87	[illegible]	1.76	3.94	1.37	2.72	7.04	4.52
Misc. & Maint. Supplies	[illegible]	[illegible]	6.16	6.88	3.28	4.34	2.62	5.56	1.90	4.95
Prop. Tax, Ins. & Dep.	[illegible]	[illegible]	10.60	13.60	19.16	17.65	15.43	16.33	10.66	12.30
SS & [illegible] Tax, Group Ins.	[illegible]	[illegible]	[illegible]	[illegible]	3.66	4.21	3.00	1.89	3.70	2.48
Tank [illegible]	[illegible]	[illegible]	2.34	3.27	..	5.65	1.55	0.35	6.85	0.59
Other	[illegible]	[illegible]	[illegible]	1.54	1.05	1.52	2.61	1.11	5.39	0.84

TABLE IX B

[illegible] OF PLANT EXPENSES TO SALES

OPERATI[illegible]					VARIABLE OVERHEAD		
Plant #	1959	[illegible]	[illegible]	Plant #	1959	1958	1957
7	4.82%	[illegible]	6.07%	2	2.48%	3.08%	3.42%
2	5.38	[illegible]	[illegible]	8	2.50	2.93	3.47
1	5.70	5.76	[illegible]	1	2.53	3.55	2.63
8	5.91	[illegible]	6.57	3	3.62	-	-
10	6.48	8.65	[illegible]	5	4.30	4.53	5.41
3	6.49	-	-	10	4.73	5.94	5.24
6	7.18	[illegible]	[illegible]	7	4.77	4.72	5.16
4	8.65	[illegible]	[illegible]	6	5.23	5.26	5.78
5	11.12	[illegible]	[illegible]	4	5.64	4.83	4.00
9	12.07	10.82	[illegible]	9	6.59	6.04	5.38
All	7.37	[illegible]	[illegible]	All	3.71	4.28	4.01

TABLE IX C

RATIO OF PLANT EXPENSES TO SALES

STEAM

Plant #	1959	1958	1957
8	1.29%	1.5[illegible]	1.98%
7	1.94	1.61	2.22
3	2.74	-	-
1	3.11	3.62	4.52
2	4.55	5.24	5.29
5	5.43	6.51	5.11
10	5.63	7.39	4.97
9	7.65	6.79	6.75
6	8.69	8.46	6.69
4	9.30	8.09	8.17
All	4.45	5.20	4.88

MAINTENANCE

Plant #	1959	1958	1957
8	0.90%	1.10%	1.03%
2	1.03	1.24	1.15
1	1.26	1.69	1.34
10	1.39	2.18	1.87
7	1.44	1.55	1.59
6	2.09	1.60	2.17
5	2.45	2.08	1.98
4	2.56	1.85	1.58
9	3.30	3.29	4.05
3	9.87	-	-
All	1.68	1.87	1.86

TABLE IX D

[illegible] [illegible] [illegible] BATCH [illegible]

Plant #	[illegible]	[illegible]	[illegible]	[illegible]	5	6	7	8
$/100 [illegible]								
Labor - Operating	[illegible]	[illegible]	.5383	[illegible]	.3785	.5295	.3827	[illegible]
- Mat. & Maint.	[illegible]	[illegible]	[illegible]	[illegible]	.0960	.2024	.0746	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	.4745	.7319	.4573	[illegible]
Supplies and Utilities	[illegible]	[illegible]	.2927	.0455	.0507	.1645	.2419	-
Fuel	[illegible]	[illegible]	[illegible]	[illegible]	.2746	[illegible]	.4595	.1700
Total Direct	[illegible]	[illegible]	[illegible]	[illegible]	.7998	[illegible]	[illegible]	[illegible]
Pumping	[illegible]	[illegible]	[illegible]	[illegible]	.6666	[illegible]	.4657	[illegible]
Steam	[illegible]	[illegible]	[illegible]	[illegible]	.4080	[illegible]	.3166	[illegible]
Lab	[illegible]	[illegible]	.0832	[illegible]	.1315	[illegible]	.2423	[illegible]
Cont. [illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.3252	[illegible]	.6903	[illegible]
Total Indirect	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1.7149	[illegible]
Overhead - Fixed	.2874	[illegible]	[illegible]	[illegible]	.5478	.8569	.5551	.5633
Variable	[illegible]	[illegible]	[illegible]	[illegible]	.1645	.4676	.3861	[illegible]
Total	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	5.3507	[illegible]	[illegible]

TABLE IX E

RECORDED COSTS - 1959 ISOTHERMAL STILLS

$/100 gal.	(1) 1959	(1) 1958	(6) 1959	(6) 1958	(10) 1959	(10) 1958
Labor - Oper.	.0274	.0915	.1014	.1373	.2580	.2471
- Misc. & Maint.	.0076	.0064	-	.0138	.1215	.0909
	.0350	.0979	.1014	.1511	.3795	.3380
Fuel	.2134	.2508	.0665	.1066	.2912	.2524
Supplies & Util.	.0935	.0909	.0850	.0564	.0574	.1298
Total Direct	.3403	.4390	.2529	.3141	.7281	.7202
Pumping	.1301	.1620	.1108	.1130	.1532	.1677
Steam	.2993	.2981	.1642	.2419	1.0211	.7899
Lab	.0575	.1153	.0235	.0617	.1249	.1179
General Plt. & MS.	.0551	.3089	.0733	.5054	.7247	.6610
Total Indirect	[illegible]	.8853	.3718	.9220	2.0239	1.7365
Overhead - Fixed	.2105	.4151	.0778	.0977	.1691	.1979
Variable	.0139	.0512	.0645	.0712	.2434	.1047
Total	[illegible]	1.7905	0.7653	1.4050	3.1645	2.7393

TABLE IX F

BATCH STILLS - UNIT OPERATING COST SUMMARY - 1959

$/100 gal. Tar

TOTAL LABOR

Plant #	1959	1958
8	.1459	.5[illegible]
4	.3627	.3060
7	.4573	.4226
5	.4745	.6168
1	.4939	.4[illegible]
2	.4989	.4[illegible]
6	.7319	.5[illegible]
3	.7610	.6[illegible]37
All	.522	.4[illegible]

TOTAL DIRECT

Plant #	1959	1958
8	.3359	.6024
4	.6712	.7959
5	.7998	1.0820
1	1.0251	1.0150
6	1.0799	1.0020
7	1.1587	1.7333
2	1.1823	1.0105
3	1.4787	1.4683
All	1.058	1.0[illegible]

TOTAL INDIRECT

Plant #	1959	1958
8	.9419	1.6067
1	1.0058	1.8[illegible]
5	1.5313	2.0[illegible]
3	1.6229	1.4073
2	1.6648	1.[illegible]
7	1.7149	2.[illegible]
4	2.8300	3.2010
6	2.9271	2.5457
All	1.578	1.92[illegible]

TOTAL OPERATING COST

Plant #	1959	1958
8	1.8796	3.3723
1	2.5083	3.5707
5	3.0434	3.9135
2	3.3846	3.1835
3	3.5466	3.3281
7	3.8128	5.2185
4	4.2402	4.6951
6	5.3307	5.1307
All	3.245	3.760

TABLE IX G

BATCH STILLS - UNIT OPERATING COST DETAILS

$/100 gal. Tar

FUEL COSTS

Plant #	1959	1958	1957
8	.1700	[illegible]	.0713
6	.1835	.1507	.1641
5	.2746	[illegible]	.4074
4	[illegible]	.4334	.3950
1	[illegible]	[illegible]	.5690
3	.4295	.4000	
7	[illegible]	[illegible]	.5557
2	.6692	.5295	.6291

PUMPING COSTS

Plant #	1959	1958
1	.1331	.1584
2	.2062	.1894
8	.2329	.3201
4	.3087	.2870
6	.4036	.2513
7	.4657	.4011
3	.4765	.4000
5	.6666	.6441

STEAM COSTS

Plant #	1959	1958	1957
7	.3166	.3831	.4157
1	.3475	.6642	1.0660
5	.4080	.8200	1.7301
8	.5166	.9351	.8175
3	.5474	.4750	-
2	1.1300	1.0505	1.4734
4	1.6306	1.0450	2.0073
6	1.6723	1.0220	1.1483

TABLE XI H

PITCH HANDLING COSTS 1959

Cost $/Ton	Direct	Indirect	Overhead	Total
Bay Handling				
Cleveland	.4919	1.7205	2.0351	4.2475
Fairmont	.0689	1.6546	1.3764	3.0999
Granite City	1.5091	3.6065	1.3799	6.4955
Ironton	.4024	.6055	.5930	1.6009
Renton	.3159	1.6607	.4382	2.4148
All	.5183	1.6940	.9863	3.1986
Pan Handling				
Cleveland	.4079	1.4776	1.9688	3.8543
St. Louis Park	.6671	1.4473	.9505	3.0649
Liquid Handling				
Chattanooga	.1511	1.8887	.1274	2.1672
Cleveland	.1807	1.2578	.1387	1.5772
Fairmont	.0703	1.8389	.0159	1.5597
Maywood	.1090	.7340	.0260	0.8690
All	.1495	1.2705	.1027	1.5227

X. COST SYSTEM

Mr. McAdams discussed some of the factors involved in the preparation of the cost reports and the importance of proper allocation. He reviewed the sources of the various overhead figures which are outlined on page 53. It is to be stressed that these plant overhead figures are not catch alls for costs in distribution, and should contain only the expenses shown. These overhead figures and the cost figures in general do not include any of the main office expense. The main office costs are not individually distributed to the plants. Mr. T. E. Peilly discussed this also, pointing out that these costs are kept separately and show up on the company P & L only as an entirely separate cost center, they are usually considered informally as a percent of all sales.

The actual costs of main office operation were shown in detail and reviewed.

The possibilities for better presentation and use of the cost data were discussed. Mr. McAdams presented graphs showing possible applications. Page 54 shows a graph, using Ironton as an example, of costs and data relating to creosote oil. This illustrates graphically over an 18 month period the fluctuations of cost, sales, profit and inventory. Page 55 graphs the same data for electrode pitch at Ironton. These present a very effective use of the cost data in following plant operations.

Page 56 shows a graph of the cost versus sales ratios that have been stressed last year by Dr. Mootz. The illustration is of the total refinery ratios, but they also, effectively demonstrate a better means of following this data. It is easy to note the effect of sales fluctuations on these cost ratios.

The managers are invited to consider a more effective presentation of the cost information. It is admittedly difficult to follow and use them effectively in their present form. And, considering the value of the data, we need to find better ways to get the most usefulness from them.

REILLY TAR & CHEMICAL CORPORATION

Tar Refinery Conference, 1960

Overhead Expense

The overhead expense consists of the items on Page 5 and 6 of the Form A-25 (Accounts 40-79). These expenses represent only those for the plant and not any Main Office expense. The following classification is used:

I) FIXED OVERHEAD
- a) Real Estate and Personal Property Taxes
- b) Insurance
- c) Depreciation

The fixed overhead is allocated monthly based on book and insurance valuations. The total expense for fixed overhead does not change. It is the same regardless of production volume for any month.

II) VARIABLE OVERHEAD
- a) Plant Managers Salary
- b) Plant Supt. Salary
- c) Plant Office Salaries
- d) Social Security Taxes
- e) Workmans' Comp. Insurance
- f) Group Insurance
- g) Holiday and Vacation Pay

The variable overhead is allocated on the basis of the operating labor distribution. Since these items consist of employee fringe benefits and supervision, the expense should be in direct relationship to the labor.

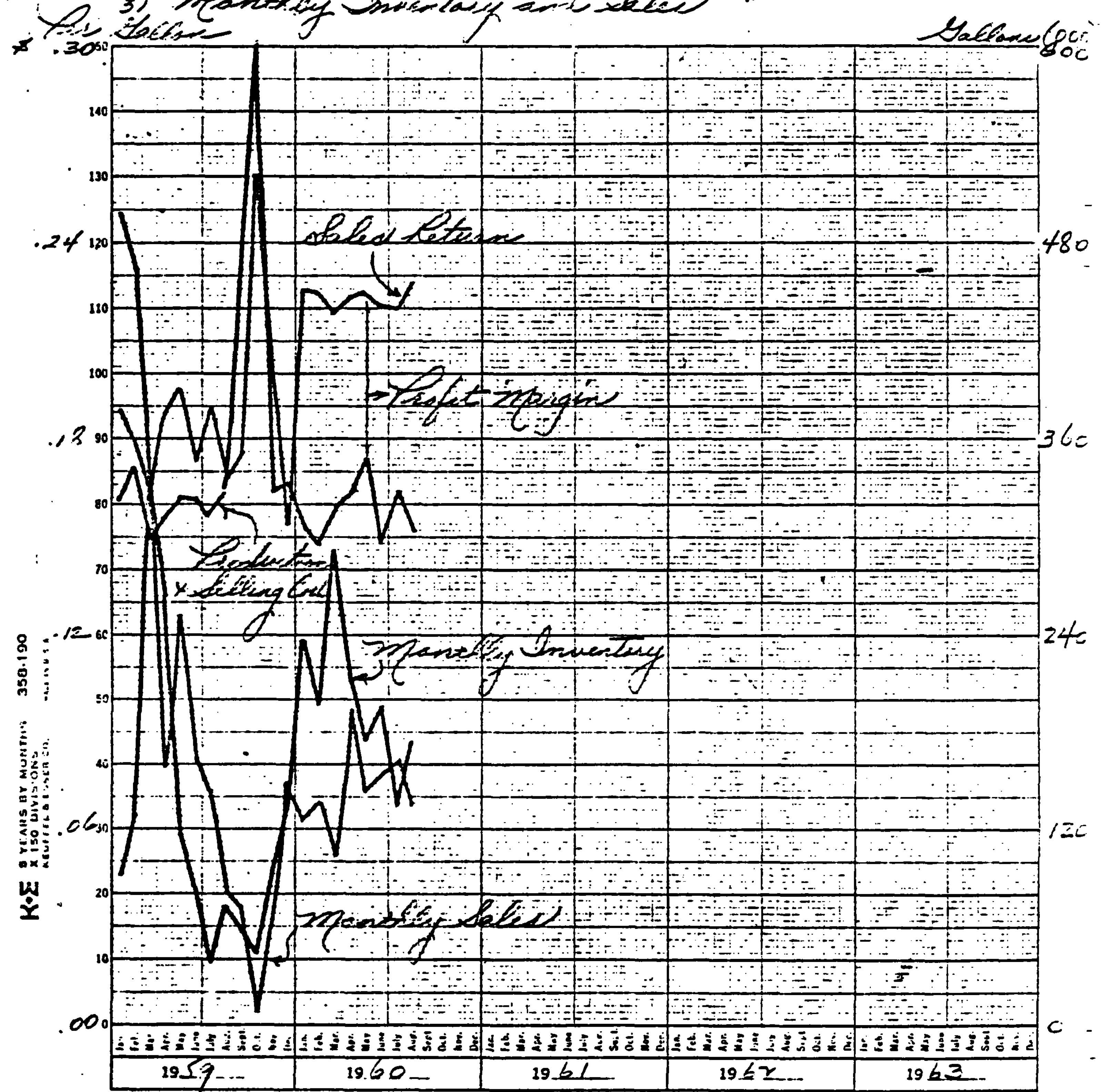
III) GENERAL OVERHEAD
All other items on Page 5 and 6 not considered fixed or variable represent general overhead. These items consist mainly of the following:
- a) Telephone & Telegraph
- b) Office Expense
- c) Rent

The general overhead is charged in full to General Plant which is then allocated with the other costs in this center.

Ironton Plant - Creosote Oil (3)

54.

1) Monthly Production and Selling Costs
2) Monthly Sales Return
3) Monthly Inventory and Sales *



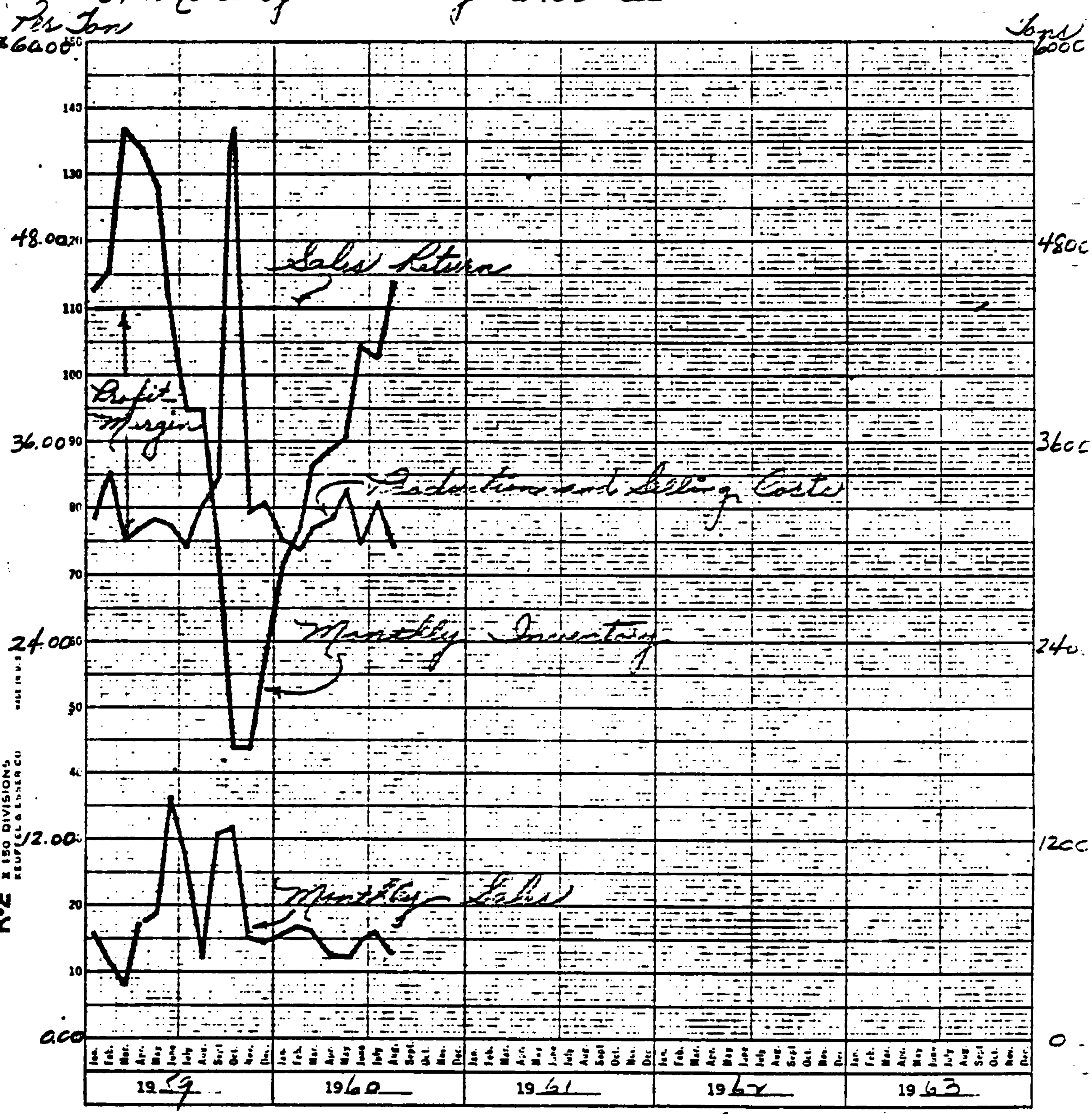
1) Sales Returns
2) Production & Selling Costs
3) Inventory (Gallons)
4) Sales (Gallons)

* use right scale

3416

Ironton Plant - Electrode Pitch

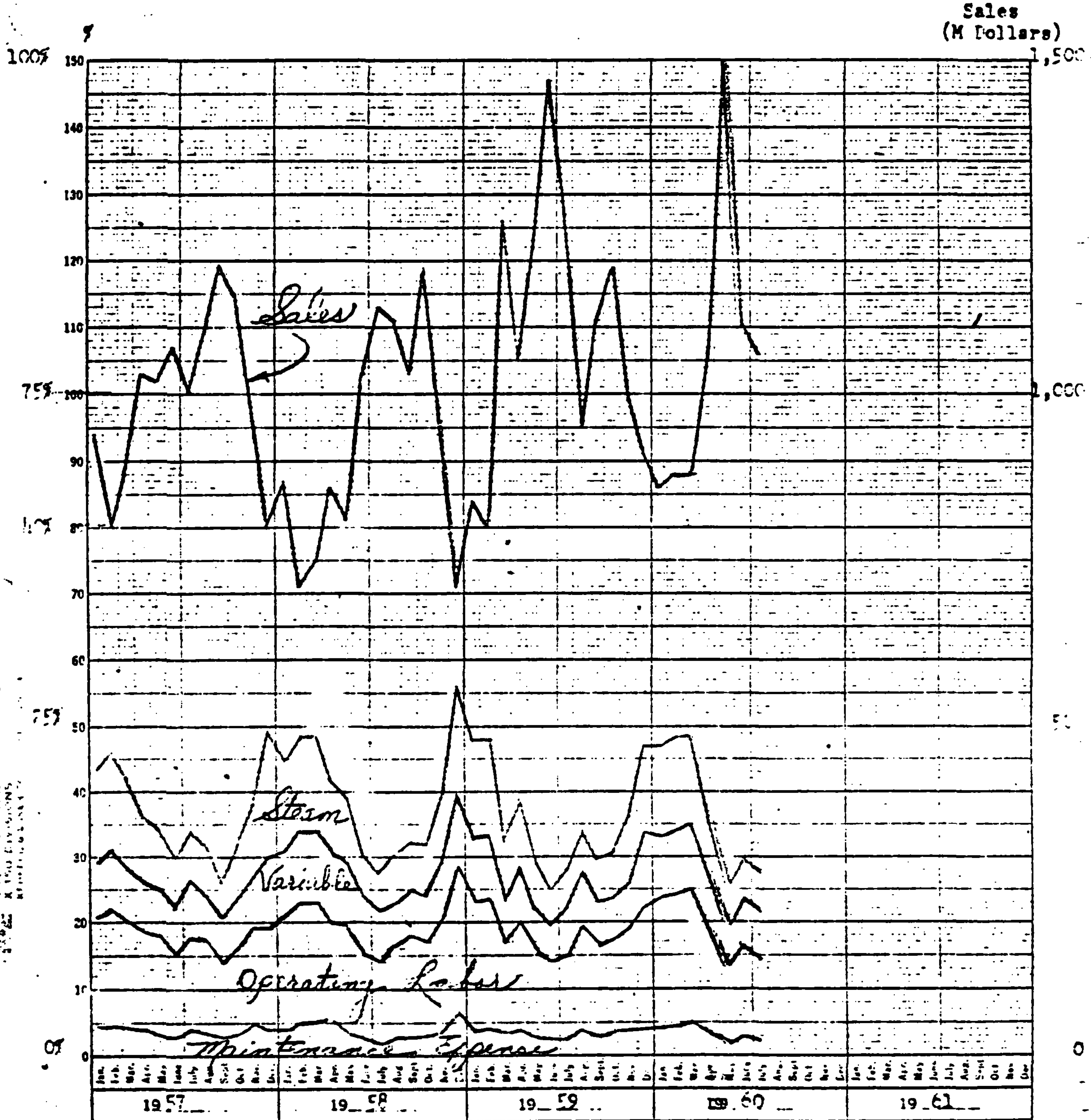
1) Monthly Production and Selling Costs
2) Monthly Sales Return
3) Monthly Inventory and Sales *



1) Sales Return
2) Production and selling Costs
3) Inventory (Tons)
4) Sales (Tons)

* Use right scale

Total Refineries - Operating Labor, Maintenance Expense, Variable Overhead, Steam.
- Percent of Sales



Maintenance Expense
Operating Labor
Variable Overhead
Steam
Sales

XI. PLANNING

Mr. Lesher reviewed some of the points to be considered in planning and inventory control. As mentioned, in other discussions, the plant manager does not actually have absolute control over many of these points, but the main value will be his advice to the main office on equipment, raw material, and product requirements and inventories.

The primary definition of production planning is that it translates sales forecasts into production schedules, and determines the maintaining of raw materials and finished goods at proper levels and prepares alternative plans for emergencies.

Some of the benefits and advantages of good planning to customers are that it assures reliable delivery dates, enables the plant to advise the customer in case of any delays, and will allow some leeway for filling of rush orders on occasion. To the Company it permits the use of facilities to better advantage, it increases productivity by decreasing idle time, decreasing cost and decreasing investment. And it permits the maintenance of inventories at the most economical levels. To labor, good planning provides even steady production rates which permits stable levels of employment, it gives good job security to the workers and allows greater job satisfaction as there is less confusion, recrimination, and futility.

Some of the functions involved in planning are:

1. preparing production forecasts by
   - a. opinion
   - b. salesman estimates
   - c. history and projection from past experience and general business conditions.
2. preparing production and equipment schedules.
3. preparing inventory controls.
4. preparing alternative plans of action.

The Table on page 59 reviews the suggested schedule for the plant manager to follow in setting up a planning or scheduling program. This was shown last year by Dr. Mootz but is well worthy of review.

Economical inventory control is one of managements main functions. It affects the total company operation, as profits come from goods that move and not from those in storage. Statistics have shown that ineffective inventory control is one of the most common causes of business failures. Excessive inventories tie up capital which could have been used elsewhere at a much greater profit to the Company. High inventories also involve carrying costs such as interest on the money actually invested in stock, the shipping and handling costs, storage and insurance costs, wages of people to handle the excessive stocks, and losses due to spoilage or wastage.

General industrial studies have shown that the carrying costs are a minimum of 12% per year of the value of the materials. But there is also a danger in too low inventories and loss of sales resulting from inability to fill orders. An economical monetary balance must be found between these two points.

TABLE XI A

PLANT PRODUCTION PLANNING

Annually

Make plans for coming year by November 1st.
Estimate product sales
Estimate raw material supplies
Estimate production rates
Estimate inventories

Quarterly

Review sales and project to next quarter
Review raw material requirements
Review and study unit costs
Review equipment and maintenance requirements

Monthly

Review cost of operations - indexes
Review sales - compare to previous periods
Review tar balance to end of year

Weekly

Review department schedules for week
Review general schedules for month
Review unshipped orders

XII. SALES

Mr. P. C. Reilly discussed the role of the plant managers in relation to the sales department. He pointed out that we produced primarily two types of products. First are standard items purchased to fixed specifications such as pitch, oil, naphthalene and phenol, and second, other special, variable specification products to suit the purchaser's requirements. Most of these first standard products and many of the second can be carried on inventory and orders can be filled on short notice.

The sales organization is actually a service department between the production department and the customer. And the sales department can set goals, estimates, and make predictions. But they need to be kept informed on the status of inventories to keep them moving. The biggest support a plant can give to sales, is to supply what the customer wants when he wants it. The communications have failed when we have these special materials that the customer doesn't need, on inventory.

Our steady profits come from repeat business and we need to satisfy the customer. The plants need to keep salesmen advised of any delays in the shipment of orders so that the sales department can forestall any customer irritation. The plant should preship orders where possible.

The plant managers have many ideas on uses or outlets which need to get to and can help the sales people. They can suggest products to offer and to whom they can be offered. They can give tips on possible business, and they can provide leads on openings for sales. These ideas are no good unless they are known, and may lead to business we might otherwise miss.

There was discussion and suggestions concerning many items. Mr. Varnell commented on the current high accident rates at intersections in Tennessee, and that the use of tar and chips might control this. An approach through the insurance companies might be possible. Mr. Nelson commented that the managers may read newspapers, journals, or magazines not seen by salesmen, and that interesting clippings could be forwarded to the sales department. Mr. Reilly noted that we are short of advertising literature, we need suggestions and ideas on items and details for inclusion in such literature. We need sales pitches stressing novel sales points on creosote oil.

Mr. Roberts pointed out that the Penta advertisements stress cleanliness, but it actually has a dirty residue of oil and the customers are being misled. The questions arose on whether solids in oil contribute to a dirty pole. Lima had one experience which showed that a high solids oil left an anthracene type solid on the outside of the pole. This should be investigated for a possible advertising advantage in sales.

An inquiry has been received on the use of pitch or tar paint on the top of poles for weather checking. The customer wanted a solid cone type product which could be set on top of the pole. This lead to the possibility of using pitch on the end of ties to prevent checking. This would be similar to a present application by Hartsell Industries, who use a pitch on the ends of high grade walnut stock to resist checking in drying ovens. Mr. Neri mentioned a Fairmont customer who purchases tar as a dip for cornseed to make it crow repellent.

XIII. NAPHTHALENE RECOVERY

Mr. Jackson reviewed some of the Lone Star experiences in oil chilling. These are summarized on page 63 along with some details from Cleveland and Fairmont. Lone Star used five 20,000 gallon tanks, three for chilling, one for salt storage and one for distilled crude storage. They have noticed the annual effect of temperature cycles, in summer with higher ambient temperatures, less salts but with a higher melting point are obtained. Also, all plants experience indicate that excessively low ambient temperatures prohibit effective draining. Lone Star rarely has trouble starting draining. Renton found a steam jet on the outlet nipple of the tank would start the draining. Mr. Hitchell pointed out the possibility of chilling with agitation to prevent the build up of the insulating layer, but that we need experimental data to control crystal size.

The question of the most effective front end oil cut to make was brought up. One method used at St. Louis Park was to distill a tar sample in the laboratory, taking 2% cuts of the distillate, and to determine from the freezing points of these cuts the proper cut point. It could be worthwhile to operate the stills with cuts controlled by distillate freezing point.

On the effect of tar acids and distillation, Fairmont reported that 45° freezing point salts with 4 to 6% acid did not yield much 78° naphthalene on fractionation. But the 78° recovery was satisfactory after acid extraction. Mr. Mitchell commented on some tests of Cleveland batch distillate and iso-thermal distillate. On laboratory fractionation of batch distillate, the 78° naphthalene recovered was 35.5% on the oil as received, 71% after acid removal, and 82% after acid and base removal. The iso-thermal distillate yielded about 19% as received, 65% after acid removal, and 83% after acid and base removal. These data all seem to indicate that you must remove acids to successfully fractionate naphthalene.

Mr. Morrison reported on chilling at Granite City of a large tank of accumulated oil. It was drained as far as possible, liquified, batch distilled with a 50% recovery of 55-60° naphthalene from the original oil. The oil did not give good yields in the pans. Granite City, generally, through their pans, centrifuging, distilling, and washing gets a 73% yield of refined 78° naphthalene from 68°C freezing point salts from Lone Star. Granite City has found the fractionated naphthalene harder to chill. They received some 75-76°C crude fractionated naphthalene from Renton which couldn't be chilled in their pans until it had been cut back with about 5% diesel oil.

On the whole we are lacking information, and all plants should try to investigate and get more experimental data on chilling to us.

TABLE XIII A

NAPHTHALENE CHILLING DATA

	LONE STAR	CLEVELAND	Crystallizer Residue	FAIRMONT	
Distillate Collected %	20.0	20.0		21.5	21.5
Freezing Point	48.[illegible]	20.0°C	60.0°C		14.5
Tar Acids	[illegible].6	10.0			22.0
Chill Tanks	20,000 g.	15-500,000 g.		26,000 g.	10,000 g.
Temp. Conditions	75-100°F			20-80°F	60-80°F
# Drawings	2	1-2		1	
Solids Recovered	26-[illegible]%	50%	75%	31%	19.0%
Freezing Point	57-60°C	30-35°C		43°C	38°C
Oil Chilled/Year	800,[illegible] g				

XIV. ENAMEL ROUND TABLE

Mr. Mitchell moderated the discussion and brought up the first question of the possible substitution of heavy oil for S-2 in the formulation of 230 and hot surface enamels. The purpose of the substitution is to consume more oil and that it's substitution does not affect the quality. Mr. Jackson commented that increasing the S-2 makes the enamel easier to hold on primer and that it has some effect on viscosity. We currently have a major supply problem in heavy oil caused by lack of storage. There are cycles in both production and consumption which do not coincide. The total average availability at present is satisfactory. It was concluded that storage would be planned for Lone Star. Mr. Barnett suggested an investigation of the viscosity of enamels at a point just below application temperature to design heavy oil and S-2 ratios and to set up manufacturing specifications from this data.

The question of a change in specifications of intermediate enamel was raised. There were problems with the Tennessee Gas Company this summer concerning softness of the current grade and it was necessary to modify the enamel with pipeline grade. Mr. Mitchell pointed out the two main points for selection of enamel, which are application characteristics and performance in the finished condition underground. Semi-plasticized enamel is superior over pipeline for certain conditions, while there is less cold flow in fully-plasticized. It was concluded with agreement of the sales department, that we would offer two grades, tropical with a softening point of 190-200° and penetration of 0-4, and temperature with a softening point of 195-205° and penetration of 2-7.

The hot surface enamel specification was discussed and confirmed. It should have a 240° minimum softening point, five hours at 200° and 24 hours at 160° deg. and a penetration of 2-6 at 77°.

The previous conclusions to collect test data on cone penetration for correlation with field performance data was brought up. It was pointed out that we have collected but not correlated any information, there is a shortage of adequate field performance data. For conclusive comparison we need lab data on enamel used under specific field conditions. A sample of the enamel is needed if it is a competitor's, and data on pipe temperatures, location, weather, etc. is required.

The recent complaint of the Hall Process Company on high viscosity and high required application temperatures of 230 Enamel was discussed. The specification was considered and it was decided to manufacture to a 200-235° softening point specification. Mr. Barnett discussed the use of a Bray Bender device for viscosity measurement and Mr. Mitchell announced the intention to obtain such a device.

The problem of the recent settling of primer at Lone Star was concluded to be due to poor quality solvent and failure to agitate before shipping. Maywood requires tankage to store good solvent naptha. Lone Star was directed to set up a rule, as at Maywood, to agitate before shipping, any primer in storage over 60 days.

The plants were instructed to use method D-559 for penetration tests and to follow it specifically without variations. Mr. Graf will set up a test comparison program. Samples will be sent alternately every three months by each plant for cross checking of test results.

The failure of the Cowles dissolver in the test on primer manufacture at Lone Star was attributed to a bad blade. Mr. Barnett will push the Louisville representative to get some cooperation at Lone Star for further test work. Mr. Lesher will review the economics of moving X-1 primer production to Lone Star in light of the decreased capital investment afforded by the Cowles dissolver.

Maywood is holding base awaiting an order for QD X-1 primer for Hill Hubble Company.

Mr. Barnett pointed out that we have had 12-15% of the enamel market and that the demand will be substantially greater in the future. Lone Star shipments have increased from 7500 tons in 1951 to 23,000 tons in 1959.